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FOUNDRY TRADE JOURNAL

WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

VOL. 106
No. 2226
Registered at the G.P.O. as a Newspaper

JUNE 11, 1959
Offices: John Adam House, John Adam St., London, W.C.2

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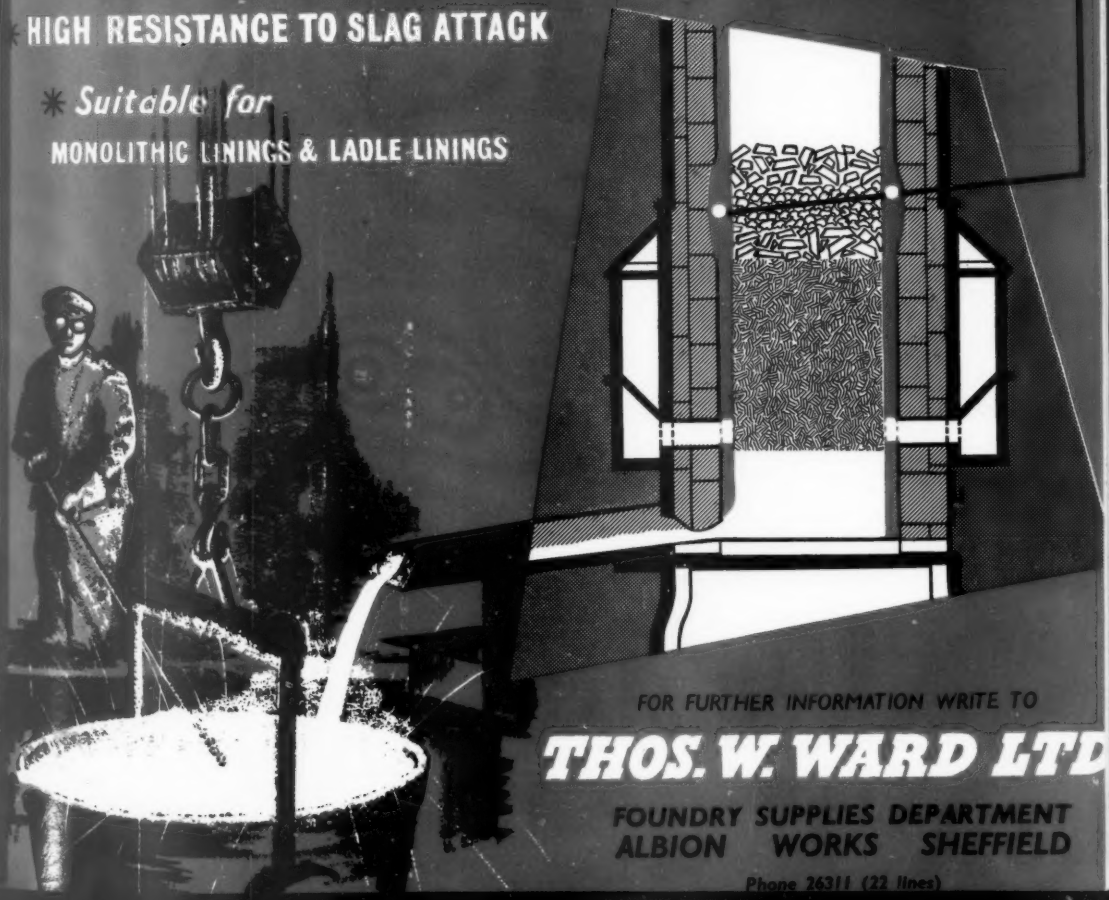

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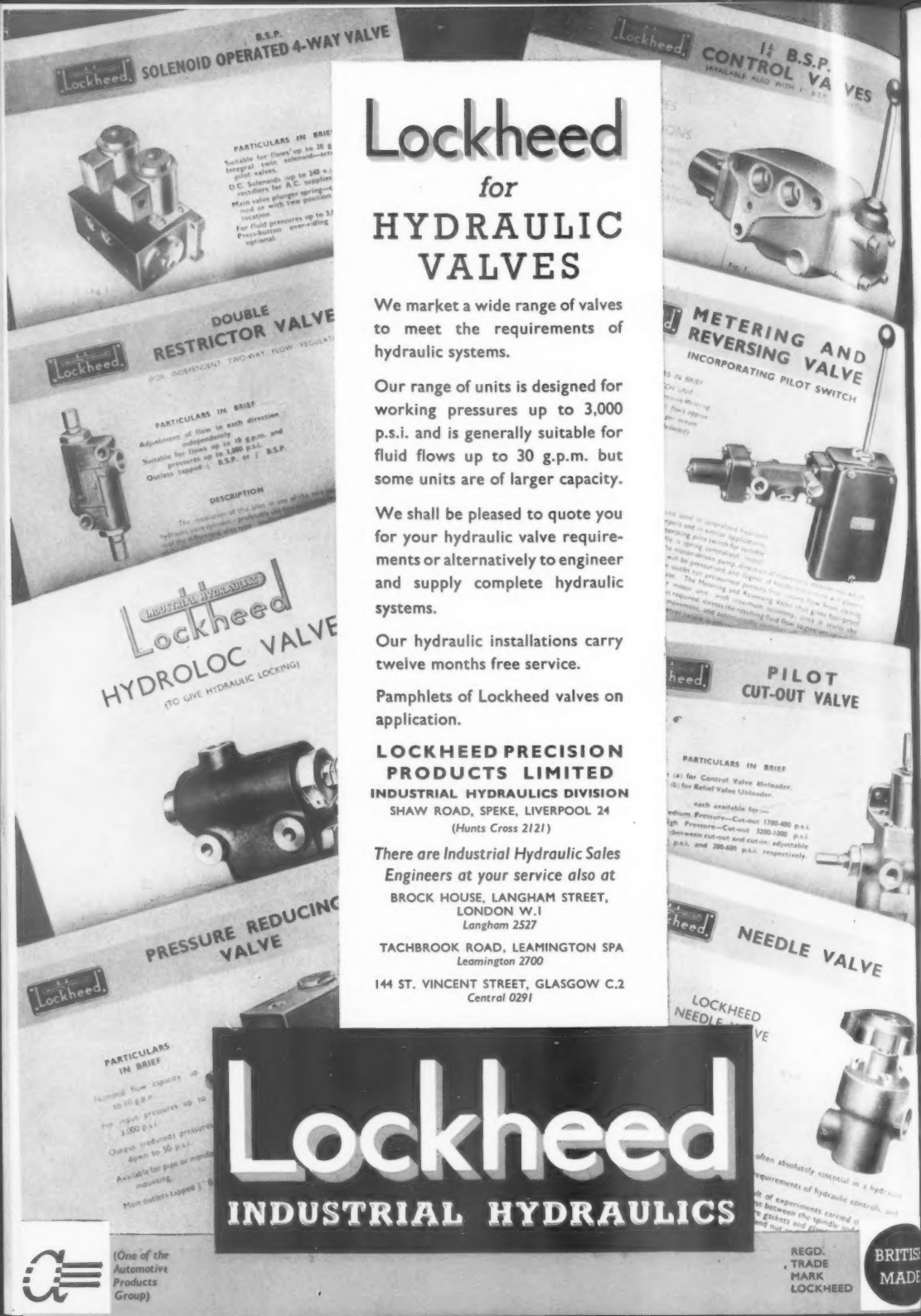

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FOUNDRY TRADE JOURNAL

Vol. 106. June 11, 1959 No. 2226

Established 1902

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IRON & STEEL TRADES JOURNAL

Single copy 1s.; *by post* 1s. 4d. *Annual subscription: home* 52s., *abroad* 60s. (*prepaid*)

Editor:
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The FOUNDRY TRADE JOURNAL is the official organ of the British Steel Founders' Association; Association of Bronze & Brass Founders; the Light Metal Founders Association; Foundry Trades' Equipment & Supplies Association; and the National Society of Master Patternmakers.

AN INDUSTRIAL NEWSPAPERS PUBLICATION

Published Every Thursday by Industrial Newspapers, Limited

BARRINGTON HOOPER, C.B.E.
Chairman and Joint Managing Director

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ADELPHI, LONDON, W.C.2

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Telegraph Address: "Zacatecas, Rand, London."

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PRINTING DISPUTE

Because of the dispute in the printing industry this issue of the FOUNDRY TRADE JOURNAL is reduced in size and publication may be delayed. In expressing regret to subscribers and advertisers, it is pointed out that the publishers of the JOURNAL are involved in circumstances over which they have no control. At the time of writing the position is obscure and it is impossible to forecast when the next normal issue will appear.

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FOUNDRY
TRADE JOURNAL

Vol. 106 JUNE 11, 1959 No. 2226

The Exhibition in Retrospect

The foundry equipment exhibition recently held in Birmingham attracted about 15,000 visitors from 27 countries. Its success was unquestioned and the 100 standholders were very pleased with results attained. Whilst sales of considerable magnitude were made, what the standholders much appreciated were such remarks from strangers as: "I have been using your material for many years"—small incidents in themselves, but so helpful in improving customer/supplier relationships. The only "grouse" we heard was that the luncheon speeches were marred by the noise of machinery in operation, but this we dismiss as frivolous, as oratory ranks low in the attractions of a trade exhibition.

The opinion of a German engineer represented on one of the stands is worth quoting. He insists that the Bingley Hall show was better than the 1956 Düsseldorf Exhibition—that the latter was too big for the visitor to see in reasonable time; that interest in foundry equipment suffered from dilution and that, in contradistinction, there was, in Birmingham a much larger percentage of the attendance who were, if not potential buyers, at least profoundly interested in technical developments. The opinion of a well-known foundry consulting engineer was that it was an extremely "gentlemanly" exhibition. We interpret this to mean that there was nothing garish, no ebullient salesmanship and a true *camaradie* amongst the exhibitors. This was due to the fact that most of the standholders held membership of the Foundry Trades' Equipment and Supplies Association and thus were not strangers to each other. Moreover, the president—Mr. Gavin C. Paterson—was always available to help and advise.

There is always, especially at the conclusion of a successful exhibition, much speculation as to the staging of the next similar venture. By and large, there is a straight division of opinion here between the equipment manufacturers and the raw-material houses. The former need several years, usually four is mentioned, to design, develop and perfect new machines, whilst their actual display is very costly. The foundry suppliers, not having these disabilities, favour quite short intervals between exhibitions. Then, again, some wish the show to be enlarged to include the exhibition of actual castings. We are of the opinion that the method used at Birmingham of having combined exhibits from the foundry industry is adequate, as they make good propaganda for research and recruitment to the employers' federations.

C. H. WILSON

President of the Institute of British Engineers and Director and General Manager, Cockburn (Middlesbrough) Limited

Featuring . . . .

MR. CHARLES H. WILSON

MR. CHARLES H. WILSON, who was elected president of the Institute of British Foundrymen for the year 1959/60 at yesterday's meeting, is general manager of Cochranes (Middlesbro') Foundry Limited. He was educated at Rossall School and subsequently became a special apprentice with the Stanton Ironworks Company, Limited, covering both the engineering shops and foundries. He then decided to concentrate on foundrywork and entered the British Foundry School (forerunner of the National Foundry College), obtaining a diploma at the end of the course. After leaving the School, he took the post of assistant foundry manager at the Britannia Iron & Steel Company, Limited, and later, took charge of the foundry. For a short period during the war, he joined Boulton Paul Aircraft, Limited, as assistant chief planning engineer. Subsequently, Mr. Wilson went out to the Indian Iron and Steel Company's Kulti Works to construct and start up a spun-iron pipe plant. On his return to this country, he joined Stewarts and Lloyds' department of research and technical development, before taking up an appointment as foundry development engineer at Stanton Ironworks Company, Limited in 1947. From 1949 to date, he has held his present appointment with Cochranes (Middlesbro') Foundry, Limited, of which firm he became a director in 1956. Mr. Wilson also holds appointments with the Stanton Ironworks Company, Limited, is a liveryman of the Worshipful Company of Founders, a freeman of the City of London, and a past-president of the Tees-side branch of the Institute of British Foundrymen. Recently Mr. Wilson was made a governor of the National Foundry College.

Mr. Wilson is a very busy man and travels fairly extensively abroad. Hence, he has little time to follow his hobbies which are gardening and golf.

B. & F. Golf Competition

For the first time in the writer's memory, the McKenna Cup offered annually by Bradley & Foster, Limited, for competition amongst friends of the firm including representatives of business houses with whom they have dealings, was won by a member of the firm's own staff, Mr. H. W. Bonser. As usual, the function attracted a good turnout of competitors and over 100 attended the dinner, held later in the evening, at the George Hotel, Lichfield, at which the company were also hosts. For the golf, which was held on the Whittington Barracks Course, near Lichfield, the weather was kind and some quite good scores were recorded. The runners up were Mr. L. Bramhall (of Church and Bramhall, Limited), second, and Mr. R. J. Sherwood (of Crittall Luxfer, Limited), third. At the evening dinner, Mr. G. E. Lunt, director, Bradley & Foster, Limited, presided and first apologized for the absence of their chairman, Mr. J. P. Hunt, and also of Dr. J. E. Hurst, J.P., who was indisposed. Welcoming Mr. M. Froggatt, deputy managing director, Staveley Coal & Iron Company, Limited, who had also been amongst the competitors, he mentioned that this was the tenth anniversary of the presentation of the Cup by Mr. T. A. McKenna, chairman of the Staveley Coal & Iron Group. Mr. Lunt also expressed the thanks of the assembly to Mr. Jack Allen (director, Bradley & Foster, Limited) who had organized the function, helped by other members of the staff.

To present the Cup and other prizes, Mr. Lunt introduced the Rt. Hon. Member of Parliament for Peterborough, Mr. Harmar Nicholls, J.P., Parliamentary Secretary to the Ministry of Works, who then officiated in that capacity. Mr. Harmar Nicholls then voiced to the company a sincere "thank you" on behalf of the guests, making an extremely witty speech. Mr. Froggatt acknowledged on behalf of the Group and Mr. W. Aske (of Wm. Aske & Company, Limited) closed the semi-formal proceedings by asking for endorsement by the assembly of further vote of thanks to all concerned, especially for the hospitality provided.

Coke Supplies in South Africa

Mr. A. G. Lewis, writing in the *South African Engineer*, draws attention to the fact that the Union is probably the only industrialized country where by-product coke is not available to the foundries. He states that the coke at present offered to the Union places the overseas manufacturer who wishes to establish a foundry in the Union under the following disadvantages:

(1) Around 25 per cent. more pig-iron, for metal comparable to that obtained in Europe, must be used. (2) Only about 70 per cent. of coke purchased is eventually useable due to shattering transport and handling, so that coke which is rated at £5 per ton on the cupola platform actually costs £7 per ton, the fines being valueless. (3) Cupola and foundry practice has to be superior to that of countries overseas, otherwise higher machine-shop costs and more customer replacements and complaints must be expected.

Remedies suggested by Mr. Lewis are that a Government sponsored levy be made on coke prices and this be set aside for by-product oven installation: he points out that the levy cost would soon be re-couped by the use of coke of better shatter test. He also recommends that "hand-picked" bee-hive coke should be offered at a premium price, and finally that further investigation be made into the economics of the production of lower ash coke—even a 5 per cent. reduction would be helpful, and, combined with better shatter, would command a better price.

Mr. Lewis goes on to say that two courses lie open to the foundries. The first is to use advanced basic slag melting, with the best technical assistance obtainable, and the second, where a new foundry is contemplated with a tonnage of more than 200 tons monthly, the possibilities of the pulverized coal-fired hearth furnace should be considered; the price margin between coal and coke being considerable. With a well-designed furnace, fuel ratio is similar to that of a cupola and metal fluidity is no longer a problem.

Correspondence

CAST IRON SEAT

To the Editor of the FOUNDRY TRADE JOURNAL.

SIR,—The enclosed photograph is of a Victorian cast-iron garden seat of which I need 20 or 30 reproductions cast from the original. Can you put me into touch with a West Country or nearby Midlands or S. Wales firm who could do this quickly? All the local firms I have tried can make only one a week.

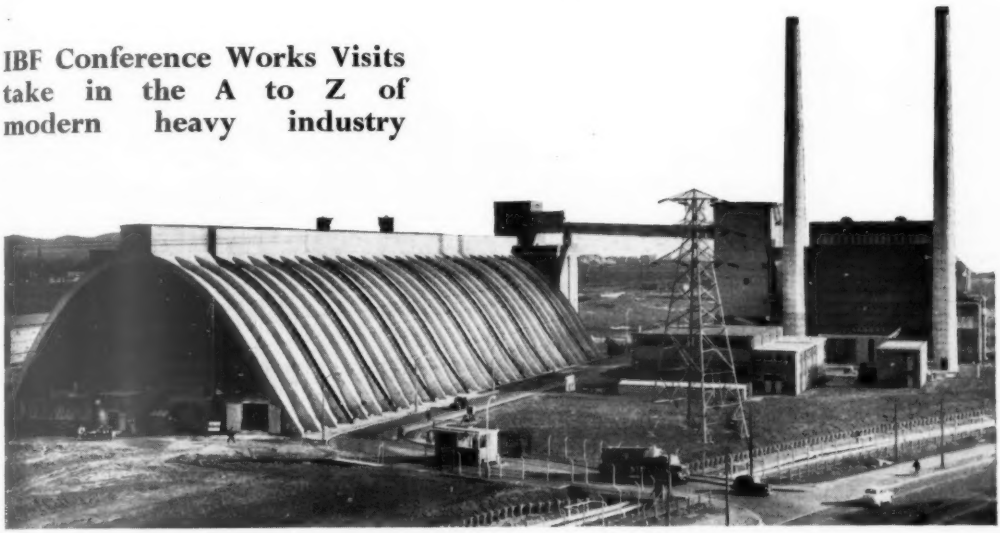
Yours etc.,
ROBIN EDEN.

The Antique Shop,
Pickwick End,
Corsham, Wiltshire.

(Founders who may be able to undertake this work should negotiate with Mr. Eden direct—EDITOR.)

Diversity of Production on Tees-side

IBF Conference Works Visits take in the A to Z of modern heavy industry



In no other area of the UK is there so great a diversity of production undertaken for heavy industry as on the Tees-side, where establishments range from chemical works to shipbuilding. Brief accounts are given below of some foundries in the area, and of firms connected with the foundry industry both as suppliers and customers. A total of 11 works are to be visited by IBF parties: Imperial Chemical Industries, Limited (Billingham Division); Darlington Forge, Limited; Jarrow Metal Industries, Limited; Davy and United Roll Foundry, Limited; Ashmore, Benson, Pease & Company; Head Wrightson Steel Foundries, Limited; Cochranes (Middlesbro') Foundry, Limited; R. W. Crosthwaite, Limited; Summerson's Foundries, Limited; Dorman Long (Steel), Limited, and Richardsons, Westgarth & Company, Limited.

Imperial Chemical Industries, Limited (Billingham Division)

The Billingham division of Imperial Chemical Industries, Limited, is the largest chemical factory in the Commonwealth. It employs over 17,000 people, occupies over 1,000 acres and has 80 miles of rail track and 10 miles of roads. Here, 80 different products are manufactured and the factory has an output of over 2,500,000 tons a year and uses 4,800 tons of coal per day and 250 million gallons of river water per day for cooling purposes. To-day, the factory is producing a whole range of new chemicals which find their way into virtually every industry in the country, in addition to its basic products—ammonia, fertilizers and acids. One of the carbonylation plants is shown in Fig. 1. The Billingham division is split up into eight separate units, five carry out manufacturing processes, one is engaged on pilot-plant operations, and two provide services which are essential to the running of the factory.

In the north-east part of the site and dominated by two 300-ft. chimneys are the boiler and power plants of Gas and Power Works. This is the heart of the factory, supplying steam and power for the thousands of machines and many processes that operate ceaselessly for twenty-four hours a day. These boilers and coke ovens consume more than 4,300 tons of coal every day and the most modern electrostatic equipment is used to remove ash and dust from the flue gas before it passes up the chimneys. The control room of the power plant with its central control station and vast wall-area of illuminated indicator panels is one of the "highlights" of the visitor's tour. One of the showplaces of the factory is the sulphate silo (see illustration in the heading above*). This cathedral-like, air-conditioned concrete structure can hold nearly 100,000 tons of sulphate of ammonia. Such is the present-day demand for fertilizers that it is never full, although towards the end of the winter it holds many thousands of tons in readiness for the big demand in the spring.

Engineering—Construction and Maintenance

More than half the employees who work at the Billingham chemical factory are engaged in

* The diversity of production on Tees-side is nowhere better shown than at the Billingham Works of Imperial Chemical Industries, part of which is pictured above. Interest for founders in this huge chemical works is focused on materials produced for the CO_2 Process.

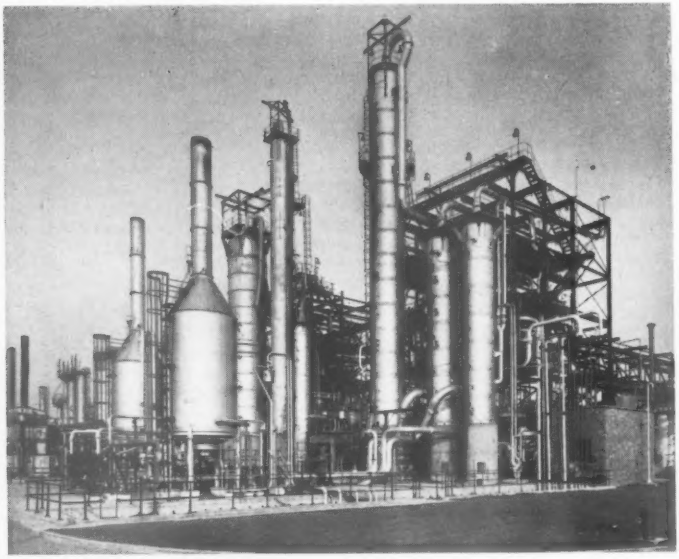


FIG. 1.—*One of the carbonylation plants at the Billingham division of Imperial Chemical Industries, Limited.*

engineering work. The manufacturing works maintain their own plant and equipment, but in addition nearly 3,000 men are employed in engineering works in extensive up-to-date workshops and in civil-engineering projects such as the erection of new plants and the laying and upkeep of roads and rail tracks.

FIG. 2.—*Pattern for a two-piece cast-steel sternframe supplied by Darlington Forge, Limited, for a 65,000-ton oil-tanker.*

Packing and Despatching

One of the biggest problems in the running of a factory as large as Billingham is the handling and transport of 3½ million tons of raw materials and finished products that enter and leave the factory in a year. Much of this huge tonnage is transported by rail and two large railway grids—for incoming and outgoing traffic—facilitate delivery and collection by British Railways. The factory operates its own internal rail system of 80 miles of track, 20 locomotives and over a thousand rail-wagons of various types. Considerable tonnages of products are also transported by road, either by the Division's own fleet of road vehicles or by haulage contractors. The Division also has riverside wharves which can accommodate ships of over 8,000 tons.

Research

The research departments at Billingham are split up into four main research groups—organic, inorganic and physical chemistry, and engineering. Nearly 500 members of the staff are engaged full time on this work, over half of them being science graduates. Pilot plants are operated for months (sometimes years) before it is decided to proceed with the construction of the full-size plant. During this exploratory period, their products are evaluated in the Division's laboratories and despatched, in trial lots, to potential users for extensive field tests. At this stage also, much modification to the design of the plant or process may be carried out and the research works has its own engineering workshops and stores. Other departments include the technical department, new product department, and a department for plant design and engineering research.

The foundrymen visitors are expected to find particular interest in the production of carbon dioxide, a side reaction product in the making of synthetic ammonia. (Sodium silicate is a product of ICI alkali division in Cheshire.) Isopropyl alcohol used for ignitable mould and core dressings is manufactured at Billingham by the heavy organic chemicals division.

Amenities

It is the policy of ICI to make its employees feel that they are really part of the organization, to give them a sense of partnership and a feeling of security. This is evident in the works councils, production efficiency committees, pension funds,

profit sharing, training courses, medical services, welfare schemes, and amenities like canteens and recreation clubs. There are nearly 60 acres of sports grounds and a well-appointed clubhouse, a well-equipped gymnasium for the Division's young employees, the Division's guest house and senior-staff club.

Darlington Forge, Limited

Darlington Forge, Limited, on account of its geographical position and the steel castings and forgings which it has been producing for nearly a century, is intimately associated with the marine, electrical and engineering industries of the North-east coast. Founded in 1845, the works at that time covered less than an acre. For a few years, the company concentrated mainly on railway materials, but in the early '60's, the manufacture of marine forgings commenced. About 1888, the business was further extended by the erection of a large foundry for the manufacture of heavy steel castings by the acid open-hearth process. Later additions included large forging presses of up to 2,500 tons capacity, together with ancillary heat-treatment and machining facilities. In 1930, Darlington Forge, Limited, became one of the English Steel Corporation group of companies.

To-day, the works cover 44 acres and employ some 800 people in the melting shop, foundry, forge, machine shops and ancillary departments. The melting department supplies the needs of both the foundry and the forge and has two acid open-hearth furnaces of 40 and 60 tons capacity respectively, and also a 30-ton basic open-hearth furnace.

Steel Foundry

The heavy steel foundry consists of two bays covering an area of 25,000 sq. ft. and is served by 100-ton and 60-ton overhead travelling cranes. A new heavy foundry bay, 206-ft. long by 80-ft. wide, is in the course of construction and will be served by a 150-ton overhead crane and a 5-ton monorail crane. Two casting pits, one 76-ft. long by 26-ft. wide by 14-ft. deep, and the other 36-ft. long by 26-ft. wide by 14-ft. deep, are being installed. There are two existing pits for the casting of steel rolls and these are 40-ft. long by 12-ft. wide by 22-ft. 6-in. deep. The foundry can make castings from five to 75 tons in weight and most of the moulding is done in chamotte compo in the foundry floor, the moulds being dried with portable town-gas-fired driers.

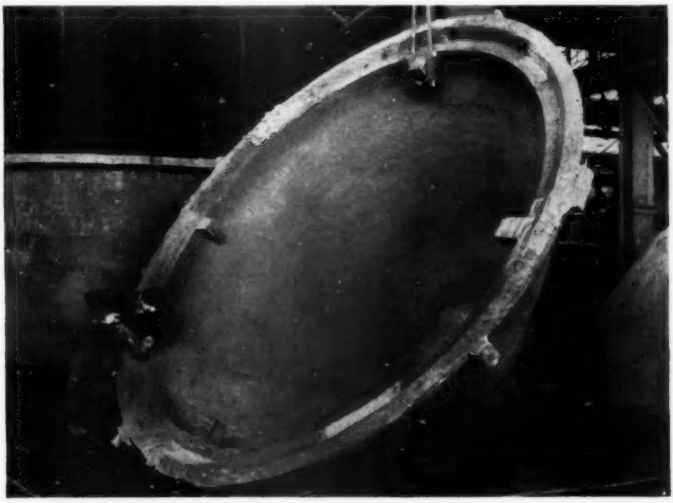


FIG. 3.—*Cast-steel bell (dia. 15 ft. 6 in.) for use in a blast furnace, made by Darlington Forge, Limited.*

Other Departments

A new fettling shop has recently been completed and is 450-ft. long by 80-ft. wide, and is served by 100-ton and 30-ton overhead cranes. In this shop is a Hydroblast plant and a gas-fired pit annealing furnace, 30-ft. long by 24-ft. wide by 12-ft. deep. Housed in a separate building is a shotblast plant, capable of handling the largest castings made and served by a wet-type dust collector. The heat-treatment department can deal with a wide variety of castings and forgings in its specially-designed furnaces. This equipment consists of clean-gas-fired furnaces and vertical and horizontal electric furnaces. High-level cranes for the purpose of oil quenching at high speed are also included. The machine shops, which cover an area of some 150,000 sq. ft. are modern in design and fitted with most up-to-date equipment. These shops are suitable for machining to fine limits the heaviest castings and forgings required in the marine, electrical and general-engineering industries.

Although particularly well known for ships' structural castings (see Fig. 2) and forgings, a wide range of products for general-engineering purposes is also made. Ships embodying Darlington Forge products include the Queen Mary, Mauretania, Oronsay, Orcades, Chusan, Himalaya, Empress of England, and many naval vessels and large tankers. Work is at present in hand for the new "Empress" passenger boat, and also for several 65,000-ton tankers. General-engineering products produced by the firm include large bells (Fig. 3) and one-piece hoppers for blast furnaces, and castings for rolling mills, shears, forging and extrusion presses.

Jarrow Metal Industries Limited

Jarrow Metal Industries, Limited, now associated with Armstrong Whitworth (Metal Industries), Limited, was founded to alleviate a severe industrial depression. In May of this year, the company

FIG. 4.—*Casting being finished by grinding, before machining, in the fettling shop at the works of Jarrow Metal Industries, Limited.*

celebrated its twenty-first birthday as a steel-producing company. Jarrow Metal Industries was officially opened in 1938 when the late Sir John Jarvis, Bt. established, in a redundant boiler shop, an industry capable of energizing economically one of the worst-hit areas of the '30's. Funds for the new works were provided partly by the Treasury and partly by Sir John. The venture was immediately successful, mainly because modern equipment was installed at the outset. The first cast of steel was made in a 15-ton Tagliaferri three-phase arc furnace—at that time, the most up-to-date equipment obtainable for the quantity of production envisaged. In the Jarrow Tube Works, also part of the new steelfounding organization, the initial production of tubes began on the rotary piercer and Pilger process. Many hundreds of people were employed and new prosperity was injected into an area critically affected by a moribund shipbuilding industry.

Since the official opening, Jarrow Metal Industries has produced over 400,000 tons of steel for rolls, steel castings, and ingots. Jarrow Tube Works, Limited (now a wholly-owned subsidiary of Tube Investments, Limited) has, in the same period, produced 230,000 tons of hot finished tubes and some 33½ million feet of drawn tubes.

Expansion and improved facilities have been introduced throughout the 21 years and to-day the firm is capable of producing steel to most British Standards specifications. This includes carbon-steel, creep-resisting steel, pearlitic and austenitic manganese steel, chromium and stainless steels, and high-chrome/nickel heat-resisting steel. Cast-steel rolls of all types are produced up to 45 tons finished dressed weight for the steel and non-ferrous industries. Castings produced include propellers, anchors, turbine and valve castings and frames, cylinders, crossheads, rams, etc., for large press construction. Ingots are supplied up to 15 tons. The works is equipped with three basic electric-arc furnaces with a total melting capacity of 55 tons. The foundry is well equipped with modern sand mills, Sandslingers, moulding machines, and a battery of heat-treatment stoves. The latter are pyrometrically controlled and can handle material up to 25-ft. long, 8-ft. 6-in. wide and 6-ft. high.

Other Departments

In the dressing shop, cleaning of castings is carried out on a Hydroblast plant, a metallic shotblast plant and a two-table Wheelabrator. In addition, chipping hammers, grinders (Fig. 4), Linde burners and air/carbon-arc burners are used. The research and inspection departments of the company are particularly well equipped. The laboratories have recently undergone extensive improvements and are equipped for rapid and accurate chemical analysis and the determination of the physical properties of magnetic materials, among other processes. Photomicrographs at high power under dark-field and polarized light conditions can be obtained in the metallography department. All forms of non-destructive testing are carried out in the inspection department. These include gamma-radiography with the aid of Cobalt 60 isotope and electromagnetic and ultrasonic crack-detecting apparatus.

Davy and United Roll Foundry, Limited

Davy and United Roll Foundry, Limited, Billingham, Co. Durham, is an integrated foundry producing steel castings and rolls. The weight range of steel castings produced varies from a few lb. to a maximum of 12 tons finished, and the weight of rolls from one ton to 30 tons finished. For steel castings, the furnace capacity consists of one 16-ton and one 4-ton basic electric direct-arc furnaces. The work produced is mainly for rolling-mill plant, crusher machinery and general-engineering castings in carbon and alloy-cast steels. The furnace capacity for rolls comprises three air furnaces, varying from 16 to 30 tons.

Fettling capacity has been increased with the recent construction of a modern dressing shop. Rolls produced consist of all types of chilled, grain, steel-base and cast-steel rolls for the rolling of ferrous and non-ferrous metals. Examples of modern heavy machine-tools are in daily use, including machines capable of taking work-pieces up to 56-in. dia. with a length of 22 ft. 6 in. (see Fig. 5).

Ashmore, Benson, Pease & Company

The iron foundry of Ashmore, Benson, Pease & Company is the only section of the works which continues to operate wholly on the old Parkfield site, although its activities have recently been extended to take over some of the buildings vacated by the constructional departments. The resources of the jobbing foundry are being further developed at the moment, to increase the output of the larger types of jobbing castings produced in high-duty

iron by the Meehanite process, and including spheroidal-graphite irons. Castings weighing up to 25 tons (Fig. 6) are produced in the jobbing foundry by a skilled labour force consisting of 40 floor moulders, six loam moulders, 12 coremakers, and ten apprentices. Semi-skilled operators are engaged on a limited amount of machine-moulding work and some twenty women coremakers produce small cores for this type of work. Fettling is carried out by twenty men in a separate building adjoining the foundry. The weekly output of saleable castings is of the order of 100 tons. Fifty per cent. of this output is absorbed by the company in the production of its contracts for blast furnaces, chemical and gas-making equipment, and the balance is despatched to other engineering clients located in various parts of the UK.

Patternshop and Methods

The foundry is served by a large patternshop manned by 24 skilled patternmakers, and equipped to handle patterns for the foundry and such patterns as may be required for the production of steel, malleable or non-ferrous castings required for the company's products, which at the present time are obtained from outside sources of supply. The engineering industries served by the foundry are extremely varied in character. An outstanding feature of the majority of orders handled is the intricacy of casting design, calling for the highest standards both in craftsmanship and supervision. Because of this, it has been necessary to set up a methods department manned by fully-qualified foundry technologists to deal with all incoming orders, and by drawing upon their own experience, and that of other Meehanite and Mond Nickel licensees with whom the company is closely associated, methods of moulding, types of metal, details of gating and feeding are selected which will best achieve satisfactory results. Having pre-planned the work against this background, the work of the methods department is finalized by the preparation of a methods card which is issued to the patternshop and to the floor, detailing the exact procedure to be followed.

Methods of producing moulds and cores include green sand, hand and machine moulding, loam moulding, oil sand, coremaking, Sandslinger production, and the more recently produced carbon-dioxide process. The CO_2 Process has revolutionized technique in this foundry, and it is now accepted as replacing the more conventional methods associated with the drying of moulds and cores.

Metallurgical Developments

The foundry has been closely associated with metallurgical developments which have taken place

FIG. 5.—*View of heavy machine tools in use at the Davy and United Roll Foundry, Limited, works.*

FIG. 6.—*Evaporator casting, weighing 13½ tons, in preparation at the Ashmore, Benson, Pease & Company iron foundry.*

in the foundry industry during the past two decades. The company holds the proud record of being the first outside the USA to hold a licence to produce high-duty iron by the Meehanite process. The licence to produce Meehanite was taken out in 1933 and a very large proportion of the casting orders obtained for engineering clients is produced in high tensile Meehanite, including the high ductile or "S" types. More recently, the company has obtained a licence from the Mond Nickel Company, Limited, for the manufacture of castings variously described as high ductile, nodular and spheroidal-graphite. A basic water-cooled cupola of the equi-blast type is in operation.

Amenities

Apart from the developments made in moulding and metallurgical technique, which are necessary to the survival of any foundry, the management has given much attention to the importance of amenities and recently, a modern ablutions block has been added to the works. Designed to serve the needs of men engaged in foundry work, this new building provides ideal washing and changing accommodation for 250 men. The interior of the building is finished in blue and grey paintwork with half tiling and the block is centrally heated. The building also contains a large changing room, clothes-storage room, washroom, showers and toilets.

Head Wrightson Steel Foundries, Limited

The Head Wrightson Steel Casting Division consists of two works, at Thornaby and Stockton respectively, and it is to the former that the works visit is to be made.

Steel Foundry

The steel foundry consists of three main parallel bays, each measuring approximately 860-ft. long by 40-ft. wide. At one end of these three bays moulding and casting takes place, while at the other, dressing is carried out. There is also a coreshop, measuring 160-ft. long by 36-ft. wide, and a melting shop which runs across the end of two of the parallel bays, with a patternshop located nearby.

The bays are serviced by 18 overhead cranes and seven melting furnaces, namely, five arc

FIG. 7.—*View from the middle of the induction bay at Head Wrightson Steel Foundries, Limited.*

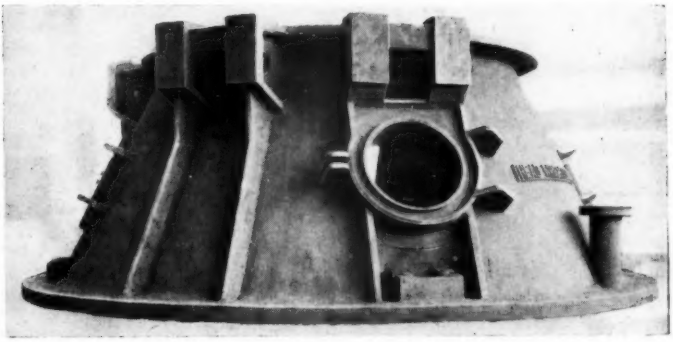


FIG. 8.—*Cast-steel distributor-base, weighing approximately 16½ tons, made by Head Wrightson Steel Foundries, Limited.*

furnaces of one-, three-, three-, seven-, and ten-tons capacity and two Efco high-frequency induction furnaces of five- and 10-cwt. capacity. In the induction bay (Fig. 7), moulding takes place and the hand moulding of the light and medium alloy castings, with a portion set aside for the apprentices. Heavier machine moulding is carried out in the middle or medium bay along with the hand moulding of the medium-sized castings, whilst heavy castings and some closing and casting takes place in the third or heavy bay. For machine moulding, there is one 4,000-lb. capacity Pneulec jolt/rollover machine, four 1,500-lb. capacity Pneulec joint/roller machines, and six 200-lb. capacity British Moulding Machine and a Sand-slinger.

Coremaking

The larger and heavier coremaking is done in the main coreshop where the cores are dried in coke-fired recirculating stoves. To service the moulding machines, there is a small coreshop situated within the induction shop and which employs female labour. The cores here are dried in a gas-fired Mathison stove with a recirculating atmosphere. The work is carried on 18 racks fitted with five trays, each rack being suspended from an endless horizontal pendulum-type conveyor.

Sandhandling and Sands

About midway down the three parallel bays are knock-out stations which are broadly the dividing line between the moulding and dressing shops. The knocked-out sand is taken by conveyor to a sand-handling plant situated outside the foundry where it is dealt with in the usual way, *i.e.*, magnetic separator, rotary screen, cooler and desilter. The sand is then re-milled and delivered as backing-sand to the foundry. This delivery belt runs between the medium and heavy bays where the sand is ploughed off into bunkers for the moulding machines and hand moulders. The sand plant also deals with synthetic green sand which is delivered to the foundry by conveyor as in the case of the backing-sand. Mould-facing sands and heavy core-sands are mixed independently of the sand plant, as is also the oil and special sands (resin, CO_2, etc.). For most of the dry sand moulding and heavy core production, natural bonded sands are used, being brought in by road from quarries in nearby South Durham.

Dressing Shop

The dressing shop broadly follows the pattern of the foundry, *i.e.*, in the induction bay small castings and alloys are dealt with and the medium and heavy work in their respective bays. In the dressing shop, there are seven shotblasting machines, comprising two rooms for cleaning large castings, one dual-table and one single-table Wheelabrators, two Tumblast machines and an outside-operated machine. Seven heat-treatment furnaces are available, the largest of which is 32-ft. long by 16-ft. wide and 10-ft. high, whilst other furnaces have facilities for oil- and water-quenching.

A fairly new pickling plant is installed in the heavy dressing bay as a further aid to the final dressing and inspection of castings for special applications. Situated within the dressing shop is a radiographic station where prototype and production castings are examined.

General

In this foundry, castings can be made up to 20 tons in weight (Fig. 8). A methods department operates in the foundry to devise and check on the methods of production, whilst a large research and development department is available for research purposes. A speciality of the foundry is the production of high-pressure valves for the oil industry in carbon and alloy steels. These are produced by synthetic green sand moulding, with the cores made in green sand in some instances. A wide range of castings is also made for the general-engineering, marine, pump, crushing-plant, electrical and excavating machinery industries. Alloy steels produced range from low-alloy, high-strength steels up to highly-alloyed corrosion-resisting and heat-resisting steels.

Cochranes (Middlesbro') Foundry, Limited

The Cochranes' works is one of the largest iron foundries in the North of England. It was established in 1854 by Alexander Brodie Cochrane and his brothers, who commenced the operation of four blast furnaces and a large pipe-moulding shop. It is interesting to note that the Cochrane brothers did much pioneering work to improve the efficiency of blast furnaces, particularly in connection with the close-top furnace and the hot-blast stove. In 1935, the blast furnaces were dismantled to make

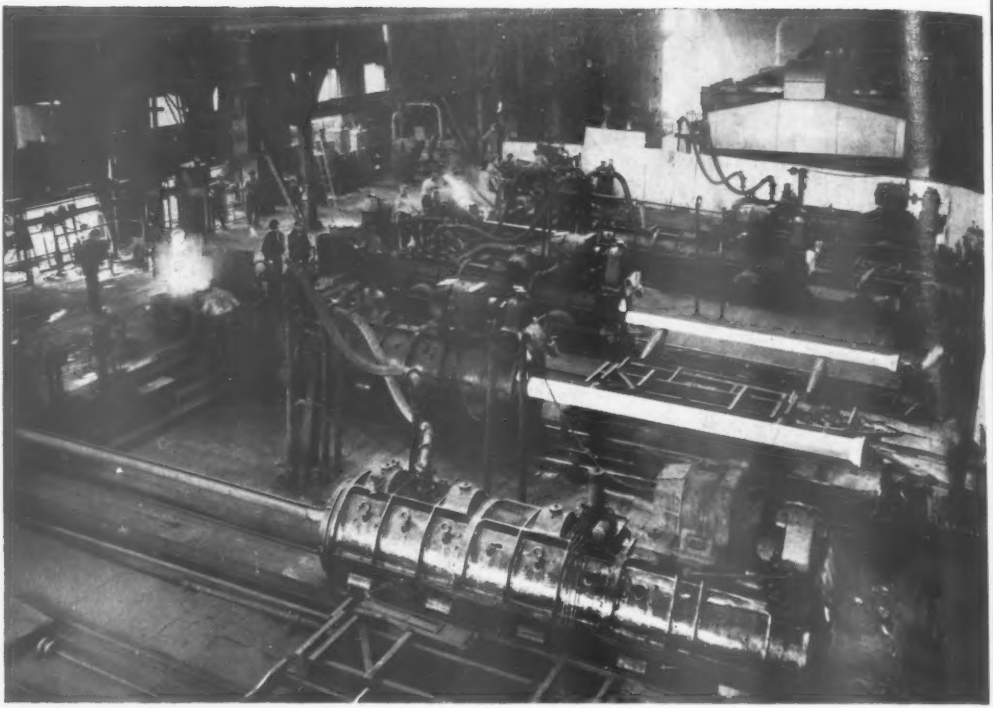


FIG. 9.—*Spun-iron pipe plant at Cochranes (Middlesbro') Foundry, Limited. Pipes are shown being extracted from the moulds.*

way for the erection of the present spun-pipe plant. (See Fig. 9.)

The works stand on a site of about 30 acres on the south bank of the River Tees, having a river frontage 1,100-ft. long and bounded on the south side by the railway. The main output consists of spun iron pipes which are produced in sizes up to 27-in. dia. and in lengths of 12 ft. and 18 ft. In addition to the pipe-spinning plant, there are two foundries operating—the largest being a general jobbing foundry and the other a mechanized foundry. Pipes are manufactured in accordance with British Standard, International and American Specifications, and are used for gas, water and sewage. A proportion of the output is for export and as there are good wharf facilities on the works, products can be loaded direct from the manufacturing plants into cargo vessels for abroad. In addition, pipes can be shipped coastwise from the wharf to any part of the British Isles.

Pipe-spinning Plant

The visitor will find of great interest the pipe-spinning plant which is the only one of its type operating in the North of England, and is capable of producing over 2,000 tons of pipes per week. Pipes in this plant are manufactured by the Delavaud process which was developed in this country soon after the first world war by the Stanton Ironworks Company, Limited.

The pipes are cast in a rotating water-cooled steel mould, having a sand core at one end to form the internal shape of the socket. There are six casting machines which are fed with molten metal from the adjacent cupola melting plant by overhead telpher cranes. After stripping from the mould, the pipes are subsequently heat-treated and pass through a finishing process, each pipe being subjected to a hydraulic pressure test. After testing, a protective coating is applied, pipes for gas usually being coated on the outside only with a cold solution and those for water pre-heated and immersed in a hot coating solution.

For customers' special requirements pipes are concrete lined by a centrifugal process and there is also plant for applying bitumen sheathing to the outside of the pipes.

Foundries

The general jobbing foundry produces standard and non-standard pipe specials up to 72-in. dia., using green-sand, dry-sand and loam-moulding techniques. Ingot moulds and general-engineering castings are also produced in this section. The mechanized foundry produces principally cast-iron

components for the various flexible joints which are a feature of modern pipe-laying. In addition, there is a well equipped patternshop and machine shop.

The welfare of the employees is a subject which is always in the mind of the management. The company has operated canteens for many years and an ablution centre was opened some years ago for the use of works employees. There is a very well equipped sports ground in another part of the town and an active sports and social club is run for the benefit of the company's employees.

R. W. Crosthwaite, Limited

R. W. Crosthwaite, Limited, Union Foundry, Thornaby-on-Tees, is one of the Allied Ironfounders Group of Companies, which group produces a great variety of appliances for the housing and building trades. Not unnaturally, a large proportion of the goods produced at Union Foundry is to fulfil the demands of this important national market. This type of product entails not only a foundry as such, but also vitreous-enamelling departments and fitting and assembly shops.

The vitreous-enamelling department is of the most modern type and a wide variety of colour and lustre finishes are applied here. In addition to the light castings of thin section which supply the housing needs, the firm has, since 1914, made engineering castings in several grades of iron, varying in weight from ounces to 2 tons. All the castings produced are made on the floor, plate moulding predominating for the light castings, and loose-pattern methods for the jobbing side of the business (Fig. 10). As orders for long runs are infrequent, these methods give maximum flexibility of operation. Castings produced by the shell-moulding process are also made, and the CO_2 Process is also employed to a lesser degree for both cores and moulds. The oil sand coreshop maintains supplies of cores for the various jobs throughout the foundry. All jobs, both core-making and moulding, are individually priced. The patternshop deals with plaster of Paris, wood, tin, iron and aluminium patterns.

Two cupolas, melting eight tons per hour are served by a mechanical charging hoist, after the ingoing materials are weighed. Close control over analysis is achieved by laboratory tests both of raw material and final product. A further small cupola (one to two tons per hour) deals with "specials." The usual maintenance departments deal with electrical and mechanical requirements.

A first-aid station, with full-time attendant, and ablution blocks for both male and female employees, which have been in operation since 1946, are models of their kind and have contributed to the physical well-being of the firm's personnel.

Summerson's Foundries, Limited

Summerson's have produced grey-iron castings at their foundry on Albert Hill, Darlington, since the earliest days of the undertaking; but in 1910, the first bay of a new steel foundry was built, equipped with a single Bessemer converter of the "Stock" type. To-day, high-quality castings are produced in a very much expanded plant covering nearly seven acres, both of jobbing and repetition types, the former up to a maximum of 5 tons in weight in carbon and alloy qualities to comply with a wide range of British Standards, Admiralty, Ministry of Supply and Lloyd's specifications. The melting plant comprises two 10 tons per hr. cupolas, working on alternate days, and two Tropenas side-blown converters (one of which is shown in Fig. 11), each of 50 cwt. nominal capacity. These feed the four shops of total floor area 97,500 sq. ft. into which casting operations are segregated according to type.

"A" Foundry

"A" foundry is devoted to producing the larger types of castings (see Fig. 12) of from ½-cwt. upwards, required in comparatively small numbers. For mould making there is an American-made Beardsley-Piper Sandslinger and a Pneulec 4,000 lb. rollover machine. Moulds are dried in bogie-type gas-heated stoves, and in this section also is a large cabinet-type shotblast plant for rough cleaning.

"C" Foundry

Foundry "C" is a mechanized shop employed on the smaller weight-range of castings. Here mould making and sand reconditioning are completely integrated. This foundry houses two side-blown converters each of 50-cwt. capacity. Oxygen injection is utilized. Moulding machines include four Pneulec turnover machines and four straight-jolt Mumford machines. Green-sand moulding is the rule here. Sand from the automatic knock-out is first cooled and the dust extracted, then it passes on a belt conveyor to a magnetic separator which takes out "tramp" iron before being delivered for

FIG. 10.—*Jobbing section of the moulding shop at R. W. Crosthwaite, Limited.*

FIG. 11.—*Metal from a cupola being poured into one of the Tropenas converters at Summerson's Foundries Limited.*

re-milling in one of two 5-ton per hr. capacity sand mills, where new sand and bonding-clay additions are made. Eventually the reconstituted sand is delivered overhead to the hoppers over the individual moulding machines.

"D" Foundry

"D" foundry is a jobbing and machine-moulding shop where a large proportion of moulds are produced by the CO_2 Process. This foundry is almost entirely confined to the production of 12/14 per cent. manganese-steel castings, which are noted for high wear-resistance coupled with extreme toughness. For mould making in this shop there are plain-jolt and jolt-ram machines. A speciality in this section of the works are track link castings for tanks, earth-moving equipment and agricultural machinery.

FIG. 12.—*Large mould being sleeked in "A" foundry at Summerson's.*

"B" Foundry

Fettling and heat-treatment of all types of castings are carried out in foundry "B." Cleaning equipment includes shotblasting cabinets and Wheelabrator machines, swing and pedestal grinders, all of the latest type to which modern ideas of dust elimination have been applied. There are two furnaces of chamber sizes 12-ft. by 6-ft. for annealing castings, and two others, with oil- and water-quenching apparatus adjacent, for hardening and tempering.

Ancillary Departments

Ancillary departments attached to the foundries include fully-equipped and up-to-date patternshops. Laboratory facilities are provided for testing sand, metal and finished castings, as well as auxiliary materials. All departments of the company are well integrated and in like manner the output of the foundries is complementary to that of the engineering shops of the Summerson organization and thus provide a unique service at the disposal of the customer.

The aggregate production of castings covers a very wide field. Castings of high-quality and accuracy are produced for oil fields, steelworks, shipbuilders, marine engineers, locomotive machinery, etc. Speciality lines include track links, cylinder castings, wear-resisting carbon and alloy steels for gear-wheels, pinions, prime movers and the like. Armament and motor-vehicle castings form a fair proportion of the total complement, all these being produced to the most exacting specifications and tolerances.

Dorman Long & Company, Limited

The most important of the post-war developments of Dorman, Long & Company, Limited has been the building, on a 680-acre site on Tees-side, of a complete new works—the Lackenby steelworks. The main buildings cover nearly 40 acres and contain over 40,000 tons of structural steel. The foundation work accounted for 160,000 cub. yds. of concrete and the total installed horsepower is of the order of 120,000. The main purpose of this new works, which has now been in operation for a year, is to produce a range of beam and column sections new to this country. The beams range from the smallest (6-in. deep by 6-in. wide) to the largest (36-in. deep with 16½-in. flanges, see Fig. 13), whilst the heaviest column section has an area of 125 sq. in. and weighs 426 lb. per ft.

The first stage of the new Lackenby steelworks was completed in 1953, when the steel furnace plant went into production. Its two hot-metal mixers and five open-hearth tilting furnaces were designed

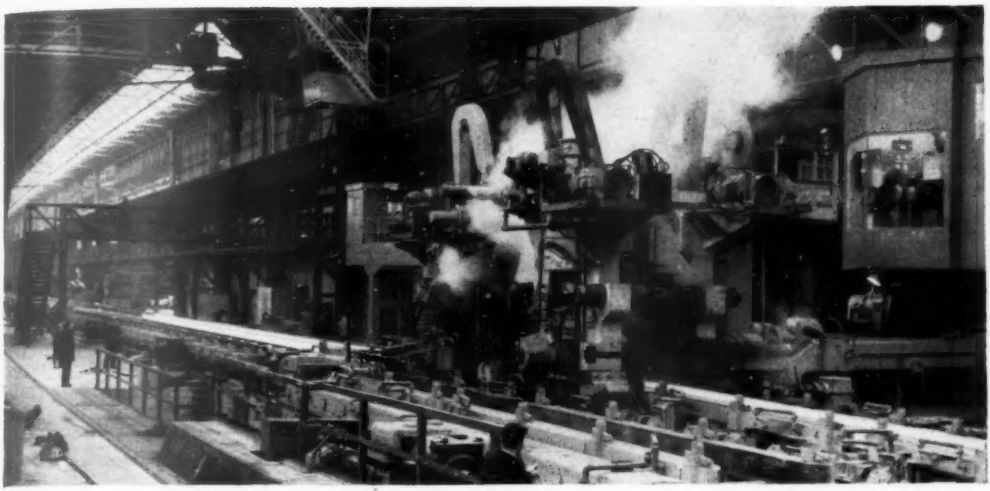


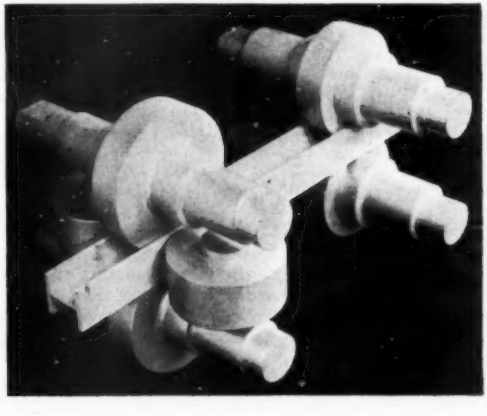
FIG. 13.—*Universal Finishing Mill at Dorman Long & Company, Limited. A* 36- *by* 16½*-in. beam is being rolled.*

to produce 625,000 tons of ingots per year, and have actually produced 720,00. The furnaces, each of 360 tons nominal capacity, can actually hold a charge of up to 480 tons. The ladles hold 120 tons, and one unusual feature of the casting practice is the use of teeming carriages. These are of semi-portal design, running on one rail over the teeming platform, and one at ground level. There are three of these carriages and they can take a ladle to any position along the shop and move it from mould to mould during casting. A second feature is the handling of the furnace non-magnetic charge materials, which are unloaded and stocked in a separate building behind the main plant. Ferro-alloys and dolomite are carried from this building in bins by 12,000 lb. fork-lift trucks, which place the bins in one of the two lifts for hoisting to the furnace stage. Lime and limestone—involving much larger quantities and noted for their dusty nature—are mechanically handled from wagon to charging box in a completely dust-tight plant, beginning with an enclosed wagon tippler and ending with a charging-box retracting feeder equipped with dust-extracting hoods.

Other Departments

The universal beam mill, lying parallel to the steel furnace plant, was designed to produce between 8,000 and 10,000 tons of beams and columns per week. At one end of a building, nearly 3,000-ft. long, are the bays where the moulds are stripped, and the ingots heated to rolling temperature. The blooming mill follows, designed to deal with ingots weighing from four to 20 tons, producing shaped blooms for subsequent rolling in the universal mills, with reheating if required. The two universal mills—roughing and finishing—are of similar design, each consisting of two stands, a main and an edging. The universal method of rolling (Fig. 14) requires four rolls (two horizontal and two vertical), all with their axes in the same plane. These apply pressure to all faces of the beam at the same time, suitable adjustments bein made between passes to keep the elongations of flanges and the position of the web. Only by the use of this method of rolling can the enormous variety of size and weight of section, and the efficient relation of flange area to web thickness, be realized. From the finishing mill, the rolled bar pases to the two hot saws, where another novel feature of the mill, measuring of the lengths to be cut, can be seen. At each saw is a sliding carriage with six stoppers,

FIG. 14.—*Arrangement of the rolls in a Universal Mill (photographed from a model at the Dorman Long & Company works).*



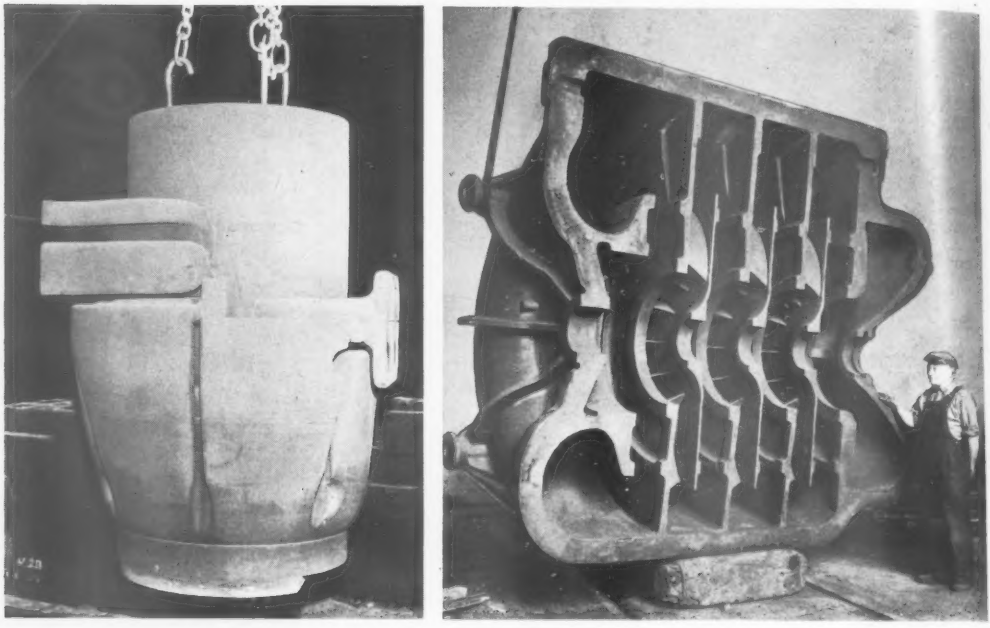


FIG. 15.—*(left) Assembly of seven cores for the production of cylinder-block casting for the same engine as in Fig.* 16, *also in air-set core material—(right) Typical large turbo-blower casting produced at the Hartlepool foundry of Richardsons Westgarth, in process of cleaning.*

spaced 10 ft. apart plus the contraction allowance. The saw operator has three rows of buttons in front of him; by pressing one in each row he can move the carriage and select a stopper, to give him any length between 10 and 60 ft. from the saw blade. As the stopper button is pressed and the stopper dropped, the selection is locked and the operator, whilst the bar is being cut, can proceed with his next selection. Raising the stopper allows the carriage to move to its next position immediately. After being sawn to the correct length, the bars move across the fully-mechanical cooling banks, being sorted on the way into their correct order sequence and on through the straightening machines to the loading and despatch bay. Here, overhead travelling cranes load them direct into wagons, or place them on the floor for inspection or to await shipment.

Richardsons Westgarth (Hartlepool), Limited

Richardsons Westgarth (Hartlepool), Limited, is a member of the Richardsons Westgarth Group of Companies, and has works situated at Hartlepool, Co. Durham. The Group has for over a century been outstanding in connection with the manufacture of power units for both land and marine applications. The Hartlepool Company is now principally concerned with the land side, on the manufacture of large turbo-alternators, steam and gas turbines, turbo-blowers, exhausters, compressors, condensing and feed heating-plant and large water tube boilers for power stations of the Central Electricity Generating Boards and industrial undertakings. The works is now being equipped to participate through the Richardsons Westgarth Group in projects for nuclear power-stations. The Company still continues to supply boiler plant and geared turbine propelling machinery for marine purposes.

The works at Hartlepool covers an area of approximately 25 acres. A large extension programme is now reaching completion, which involves extensive new shops and considerable modern plant to enable the company to remain in the forefront of manufacturing and technical practices, and to make possible the manufacture and testing of the largest turbo-alternator sets now envisaged for the Central Electricity Generating Board power-stations.

Iron Foundry

The iron foundry, which is of the "jobbing" variety, has a total area of approximately 53,000 sq. ft. Almost all the output is absorbed by the Richardsons Westgarth Group, and includes the very large castings required for blast-furnace turbo-blowers, power-station condensing plant, gas-turbine air-compressors, marine gearwheels, and

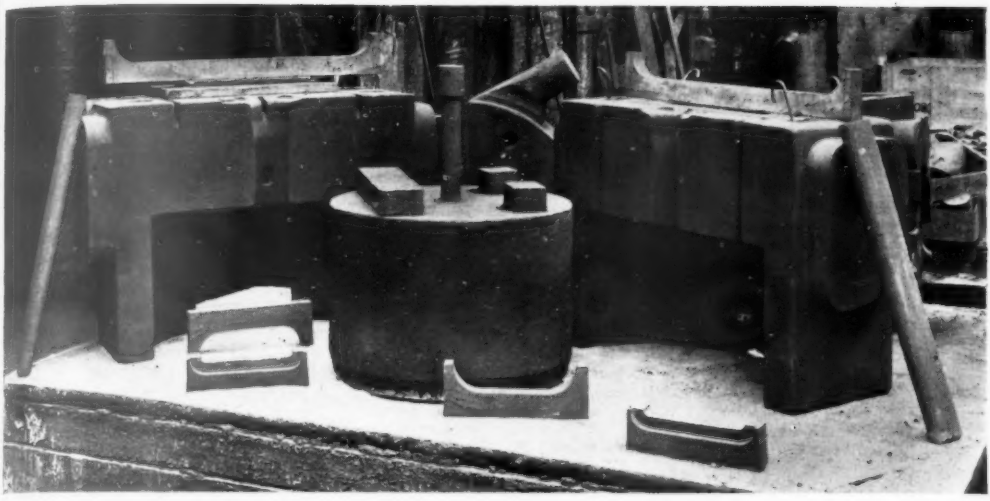


FIG. 16.—*Set of cores for Clarkes/Sulzer marine-diesel-engine scavenge-pump cylinders in air-set core material. (Richardsons Westgarth (Hartlepool), Limited.)*

Sulzer and Doxford marine diesel-engine castings (see Figs. 15 and 16), etc. The foundry can produce castings up to 40 tons in weight, and an improvement scheme is in progress of being carried through. Notable amongst the new plant being installed are a combined shotblast and decoring plant, a sand-handling plant for the production of sand suitable for use with air-set core compounds, and the conversion of existing stoves to an oil-fired recirculation system. Due to the recent recession of trade, the foundry is working on a reduced scale, and at the moment employs about 150 men of all categories.

The company employs approximately 2,500 people, and has made available to the employees considerable sports and social facilities.

Hawker-Siddeley to concentrate Turbine Production

It was announced recently by Sir Roy Dobson, managing director of the Hawker Siddeley Group, Limited, that a new company within the group, Hawker Siddeley Brush Turbines, Limited, is being formed. It is to be based in part of the existing works of the Gloster Aircraft Company, Limited, at Hucclecote (Glos).

All the efforts of Hawker Siddeley Industries in the field of industrial turbines will be concentrated in the new company. Its range of products will include industrial steam turbines previously manufactured by Brush Electrical Engineering, Limited, free-piston gasifier applications in the turbine field, turbo-chargers for diesel engine applications, and industrial-type combustion engines. Transfer of these activities to the Hucclecote works has already begun and full-scale operations will become effective before the end of the year.

Mr. H. T. Chapman, a director of the Hawker Siddeley Group and chairman of a number of subsidiaries and associated companies, is chairman of the new company, and Mr. G. B. R. Feilden, who is a director of Ruston & Hornsby, Limited, and Rotary Power, Limited, has been appointed managing director. Other board members are Mr. A. H. Frampton, Dr. B. L. Goodlet, Mr. John Colley, Mr. W. Drakeford, and Mr. P. Harrison (secretary).

Iron-ore Imports in April, 1959

Imports of iron ore and concentrates (except chrome iron ore and roasted iron pyrites) in April, and the totals for the first four months of this year and last, are shown in the table below. The figures for 1959 are not completely comparable with those for 1958.

From	Month ended April 30.	Four months ended April 30.	
	1959.	1958.	1959.
	Tons.	Tons.	Tons.
Sierra Leone	52,875	275,605	202,245
Canada	14,033	118,616	116,260
Other Commonwealth countries and Eire	1,250	1,835	4,590
Sweden	153,443	1,198,307	840,140
Norway	7,160	86,753	100,904
France	57,925	193,743	158,191
Portugal	23,843	52,544	65,933
Spain	52,799	244,205	172,904
Algeria	113,001	585,296	574,347
French West Africa	29,024	181,191	102,929
Tunisia	32,990	222,229	223,871
Morocco (including Tangier)	23,344	224,414	142,849
Liberia	30,980	96,778	130,273
Venezuela	103,670	613,451	479,003
Brazil	41,137	199,479	173,517
Other foreign countries	16,870	89,258	47,258
TOTAL	754,344	4,383,704	3,535,214

J & E Hall/Thermotank Merger

Offer for Vent-Axia

Basis of a merger between J. & E. Hall, Limited, the Dartford (Kent) engineers and ironfounders, and Thermotank, Limited, manufacturers of air conditioning, heating, and ventilating installations, of Glasgow, has been agreed. It is also announced that, on the merger becoming effective, an offer is also to be made for the £196,800 ordinary capital of Vent-Axia, Limited, ventilation specialists, of London, S.W.1.

The merger, it is stated, would be effected by the issue of £504,000 ordinary capital of J. & E. Hall to shareholders of Thermotank, a private company. This would give present shareholders of J. & E. Hall two thirds and the former shareholders of Thermotank one third of the equity of the combined undertaking, which would then be renamed Hall-Thermotank, Limited. Trading activities of J. & E. Hall would be transferred to a new subsidiary, J. & E. Hall, Limited.

Hall-Thermotank Board

Lord Dudley Gordon, chairman of J. & E. Hall, would become president of Hall-Thermotank, the chairman of which would be Mr. I. M. Stewart, chairman of Thermotank, and the deputy chairman Mr. J. F. E. d'A. Willis, a director of J. & E. Hall. The other directors would be:—Mr. J. D. Farmer, joint managing director of J. & E. Hall; Mr. A. Greenfield, joint managing director of J. & E. Hall; Mr. W. S. Hayes, a director of J. & E. Hall; Mr. F. McPherson, joint managing director of Thermotank, and Mr. J. K. W. MacVicar, joint managing director of Thermotank. If the offer to the Vent-Axia shareholders is accepted, Mr. J. C. Akester, chairman and managing director, would join the board of Hall-Thermotank.

The boards of both companies are unanimous in recommending the terms of the merger. The board of the Peninsula & Oriental Steam Navigation Company, Limited, intends to exercise the votes which it controls in J. & E. Hall (52.3 per cent.) in favour of the merger. P. & O. would then control 35.1 per cent. of the voting power of the combined undertaking. It is also proposed to sub-divide J. & E. Hall's £1 ordinary units into 5s. shares and to make a one-for-one scrip issue on the capital as increased by the merger.

The offer for the ordinary stock of Vent-Axia is 10s. 6d. per 1s. unit ex the second interim dividend of 30 per cent. and is being made by Lazard Bros. & Company, Limited, and Philip Hill, Higginson & Company, Limited. It is conditional on acceptance by holders of 90 per cent. of the capital, or such lesser percentage as may be agreed. The Vent-Axia directors have agreed to accept it in respect of their own holdings. If the offer for Vent-Axia becomes unconditional, it is proposed to finance substantially the whole of the purchase by an issue for cash of unsecured loan stock of Hall-Thermotank, the amount and terms of which will be decided nearer the time of issue.

The proposed board of Hall-Thermotank expects that, subject to unforeseen circumstances, it would recommend dividends totalling 10 per cent. for the year to September 30, 1959, on the ordinary capital as increased to £3,024,000. Details were posted on May 27 and an extra-ordinary meeting of J. & E. Hall is called for June 22.

The engineering business which later became J. & E. Hall, Limited, was founded by John Hall, a millwright, in Dartford in 1785. Specialization in refrigerating equipment dates back to 1880, when the firm manufactured cold air machines for the shipment of frozen meat. There has been a continuous development ever since of a wide range of refrigerating machinery and the company has been established for many years as one of the leading manufacturers of industrial refrigeration plant. For the past 30 years the company has also manufactured lifts and escalators.

Thermotank, Limited, in its present form developed from the organization established in Glasgow in 1901 and has specialized mainly in ventilation and air conditioning for ships. In recent years considerable progress has been made in the design and production of essential equipment for the air-conditioning industry on land.

Vent-Axia, Limited, has concentrated on the manufacture of fans and ventilating equipment for domestic and commercial use. Its subsidiary company, Axia Fans, Limited, manufactures industrial fans, largely for marine application.

Company News

EVERED & COMPANY, LIMITED, brassfounders, metal rollers, etc., of Smethwick (Staffs)—A special dividend of 6d. per ordinary share, tax free, is announced to mark the 150th anniversary, as forecast last February.

JOHNSON, MATTHEY & COMPANY, LIMITED, precious metal smelters, refiners, and engineers, of London, E.C.1—The directors announce the issue of 12,565 £1 ordinary shares at 47s. 6d. each to Johnson, Matthey (Nominees), Limited.

CHARLES CHURCHILL & COMPANY, LIMITED, machine-tool manufacturers, etc., of Birmingham—The dividend is unchanged at 18 per cent. with a 10½ per cent. final. Group net profits contracted sharply from £437,737 to £276,097 for the year ended March 31, 1959.

SPEAR & JACKSON, LIMITED, steel and tool makers, etc., of Sheffield—The dividend is maintained at 20 per cent. for 1958 and the bonus is being increased from 7½ per cent. to 17½ per cent. Group net profits were £149,938 (£123,489) after tax of £85,808 (£82,000).

ADA (HALIFAX), LIMITED, manufacturers of machine tools and washing machines—There is a final dividend of 15 per cent. on increased capital, as forecast, making 25 per cent. for the year ended March 31, 1959, against 17½ per cent. previously. Net profit was £179,762 (£83,892).

METAL CLOSURES, LIMITED—Further to the recent announcement of tentative approaches in respect of a possible bid for the shares of the company, the directors state that there has been some discussion but that it is too early to say whether any bid will result. There is £500,000 ordinary in issue.

LANCASHIRE STEEL CORPORATION, LIMITED—The interim dividend is being raised to 5 (4) per cent. in respect of the 53 weeks ending October 3, 1959, in order to reduce the disparity between interim and final payments. Last year there was a final of 8 per cent. plus a special interim of 2 per cent. for the current year.

THE ENGINEERING GROUP of Booker Bros., McConnell & Company, Limited, working in association with Vickers-Armstrongs (Engineers), Limited, has secured for its sugar machinery manufacturing subsidiaries, Duncan Stewart & Company, Limited, Glasgow, and George Fletcher & Company, Limited, Derby, orders from Russia for over £1,500,000 worth of unit equipment for beet sugar factories for delivery this year. Negotiations are also proceeding for securing a possible further contract for the supply of three complete beet sugar factories to the value of about £11,000,000.

Analysis of Cast Iron

BCIRA Conference in London

The British Cast Iron Research Association is organizing a two-day conference in London, later this month, on "Methods of Analysis of Cast Iron." It is to be held in the Assembly Hall of the Royal Commonwealth Society (entrance in Craven Street) and will be opened by the chairman of the BCIRA Research Board and Research Committee, Mr. P. A. Russell, at 2.15 p.m. on June 22. In the evening of the same day, a dinner will be held at the Connaught Rooms, Great Queen Street, London, W.C.2 and on both days a buffet luncheon will be provided at the Royal Commonwealth Society. Throughout the period of the conference an exhibition of scientific instruments will be open.

Programme

Monday, June 22

11.30 a.m. Registration of visitors in the vestibule of the Assembly Hall.

11.30 a.m. to 2 p.m. Opening of the exhibition and demonstration of equipment.

2.15 to 2.30 p.m. Opening address by Mr. P. A. Russell.

2.30 to 2.50 p.m. Report of the work of the methods analysis sub-committee, by Mr. N. L. Evans (chairman of the committee).

2.50 to 3.10 p.m. "Sampling of Pig- and Cast-iron for Carbon Determination," by Mr. W. E. Clarke, (chief chemist, BCIRA).

3.10 to 3.30 p.m. Discussion of papers presented by Mr. Evans and Mr. Clarke.

4.0 to 4.30 p.m. "Application of the Rotary Sampling Machine to Cast Iron" (including short film), by Mr. H. Green; followed by discussion.

4.40 to 5.10 p.m. "Solvent Extraction Separations in Ferrous Analysis" by Mr. W. E. Clarke, followed by film—"Determination of Magnesium in Nodular Iron" and discussion.

5.45 to 6.45 p.m. Demonstration of equipment.

7.45 for 8.0 p.m. Conference dinner at Connaught Rooms.

Tuesday, June 23.

9.30 to 10.05 a.m. "Instrumentation in the Foundry Laboratory," by Mr. R. C. Rooney (BCIRA chemical section).

10.05 to 10.25 a.m. "Photometric Detection of End-points," by Mr. J. Sneddon (BCIRA Scottish laboratories). Discussion and coffee break.

11.30 a.m. to 12.10 p.m. "Analysis of Cupola Slags" by Mr. W. E. Clarke.

2.15 to 3.0 p.m "Analysis of Trace Elements in Cast Iron."

The remainder of the afternoon will be devoted to discussion of Mr. Rooney's paper, and discussion of the papers in general; the conference will close at 4.30 p.m.

The conference fee of £4 includes the cost of the two buffet luncheons, but not of the dinner for which an extra charge of £1 5s. will be made, and those intending to participate are asked to make their own arrangements for hotel accommodation. Applications to attend the conference should be completed and returned to Mr. G. R. Woodward, manager, intelligence department, BCIRA, Alvechurch Birmingham, not later than June 17.

Law Cases

Dermatitis Award Reversed

By a majority, the First Division of the Court of Session reversed a judgment of Sheriff-sub. N. M. L. Walker, made at Glasgow last September, in which he awarded £300 damages to a machine oiler, Mr. John Brown, who had sued Rolls-Royce, Limited, Hillington, Glasgow, for £500 for dermatitis caused by contact with oil. Mr. Brown claimed that the defenders had not supplied him with barrier cream to protect his hands.

Giving the leading opinion, Lord Clyde said the defenders' system of precautions had been instituted about 1940, and had been highly praised by the doctors who had given evidence in the case. In 1941, the number of cases of oil dermatitis infection had been 353 out of a total of employees of about 16,000. Cases of the disease were now negligible. The pursuer had contended that the system ought to have included the provision of a barrier cream which, he said, was essential in any proper system of dermatitis prevention at the factory.

Lord Clyde said none of the doctors who had given evidence had said that use of the cream would prevent the disease. One of them had attributed the prevalence of its use, not to its proven inefficiency, but to the fear of employers that claims of damages might be made on them if they did not supply it, and also to intelligent salesmanship by the manufacturers. The weight and quality of the evidence was definitely contrary to the cream being an effective preventive. If so, the whole basis of the pursuer's case had gone. It was not negligence by a defender to omit a precaution which was not effective to prevent an injury, however many other people used it.

Lords Russell and Sorn concurred. Lord Carmont, dissenting, said the sheriff-sub. found that the barrier cream would probably have prevented the pursuer from contracting the disease. It might well be that by supplementing the system employed by the defenders by the use of barrier cream, dermatitis could be stamped out altogether. It seemed plain that there was scope for other treatment, and he could not see how the sheriff-sub. could have reached the opposite conclusion.

Moulders one-third to blame

Mr. Andrew Millar, iron moulder, who sustained an injury to his spine resulting in lumbago and sciatica, has been awarded £666 damages by a jury sitting with Lord Wheatley in the Court of Session. Mr. Millar sued his employers, Comely Bank Foundry Company, Limited, Broad Street, Denny, for £2,500, alleging that, because the top of a moulding box jammed, he strained his back in trying to lift it, and that the defenders failed to maintain proper plant. The defenders maintained that it was Millar's duty to inspect the box and report any defects. The jury assessed damages at £1,000 and found the pursuer one-third to blame.

STAVELEY IRON AND CHEMICAL COMPANY, LIMITED, announced on May 29 that although they were fully committed in their training scheme for junior employees they were prepared to take more on. It was said, "We feel that industry must endeavour to train as many boys as it can when they leave school. Of course, there can be no guarantee that work for them will be available at Staveley when they come out of their time, but at least they will be trained men available for opportunities whenever they arise."

IBF Election of Officers and Awards

Early Proceedings of the Scarborough Conference

At the annual general meeting of the Institute of British Foundrymen held yesterday in the Spa Ballroom, Scarborough, the following were elected or confirmed in office for the 1959/60 session. As president, Mr. C. H. Wilson (see pp. 682 and 683); as senior vice-president, Mr. G. R. Shotton; as junior vice-president, Mr. D. A. Richards; as secretary, Mr. G. Lambert; as elected members of Council, Mr. R. L. Handley, Mr. A. Kirkham, Mr. H. Paton Millar, Mr. Barrington Hooper, and Dr. H. T. Angus; as hon. treasurer, Mr. N. P. Newman; and as auditors, J. & A. W. Sully & Company. At the same meeting, presentation of the principal awards of the Institute was made by the president to Dr. C. J. Dadswell, Mr. Ben Hird, Mr. T. C. Wilson and Mr. J. B. Hollis. Brief biographical details of the vice-presidents and the award winners are recorded below.

Vice-presidents

Mr. G. R. SHOTTON, elected senior vice-president of the Institute, 1959-60, holds the position of joint managing director at Shotton Brothers, Limited. He received his early education at Smethwick Technical School, followed by part-time technical education at Birmingham Central Technical College for six years. From 1924 to 1928 he received training in core-making and moulding in the foundries of Hunt Brothers (Oldbury), Limited, Belliss & Morcom, Limited, and the Midland Motor Cylinder Company, Limited. In 1928, he joined Shotton Brothers as assistant to the foundry manager, becoming foundry manager in 1932, and he was appointed to his present position in 1949. Mr. Shotton is a fellow of the Institution of Metallurgists, and has been a member of the Council and research board of the British Cast Iron Research Association for some ten years, serving on the advisory committee for the last three or four years. He is also a member of the Institution of Works Managers and serves on the Council of the Council of Ironfoundry Associations, being a member of the recruitment, training and education sub-committee of this latter body. At the present time he is chairman of the Automobile and Allied High Duty Ironfounders' Association and a member of the National Foundry Craft Training Centre management committee. Mr. Shotton joined the Institute in 1932 and was president of the Birmingham branch in 1944. He has been a member of the Technical Council and the Birmingham branch Council for the greater part of this time, and has served on the General Council of the Institute for the past 15 years. He has presented various papers to the Institute, and for the one which he presented to the International Foundry Congress in London in 1939, on the open-hearth furnace for melting malleable cast iron, he received the Institute's diploma.

Mr. D. A. RICHARDS, junior vice-president 1959-60, was educated at Bristol Grammar School and received his early training with the family firm of Thomas Richards & Sons, Limited, and afterwards entered the drawing office at the motor constructional works of the Bristol Tramways & Carriage Company, Limited. After further commercial training he returned to Thomas Richards where he was appointed director and secretary in 1942, becoming joint managing director in 1952. Mr. Richards has taken a prominent part in the affairs of the Bristol & West of England branch of the Institute. He has been a member of the branch Council since the early years of the war, and has twice held the office of branch president. In addition he served on the Institute's education committee from 1946 to 1952, and during the war years was a member of the Ministry of Power ironfounding industry fuel committee. He was a chairman of the West of England Ironfounders' Association from 1956 to 1958, and is a member of the safety committee of the Council of Ironfoundry Associations. Mr. Richards has always been keenly interested in apprentice training and played a large part in the inauguration of classes in foundry work at the Bristol Merchant Venturers' Technical College, and the provision of a well-equipped model foundry at the Bristol College of Technology.

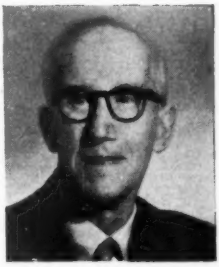
Awards

E. J. Fox Medal

On the recommendation of the assessors, Sir Frederick Scopes and Dr. J. E. Hurst, the Council awarded the E. J. Fox medal for 1959 to Dr. C. J. DADSWELL, in recognition of his exceptional services to the Institute and the industry. He is a director of English Steel Corporation, Limited; managing director of the English Steel Castings Corporation, and the English Steel Spring Corporation, Limited; a director of English Steel Forge and Engineering Corporation, Limited, and of the Darlington Forge, Limited. He has been a member of the executive Council of the British Steel Founders' Association for several years and, in July of last year, succeeded Mr. G. M. Menzies as chairman of this Association. In addition, he is a member of the Council of the British Steel Castings Research Association. (Other particulars of Dr. Dadswell's career were given in the Special Issue of this JOURNAL, issued recently in connection with the Foundry Exhibition.)

Meritorious Services Medal

The Council of the Institute awarded the Meritorious Services medal for 1959 to Mr. BEN HIRD in recognition of his outstanding work for the Institute over a period of 46 years' membership. Mr. Hird was born at Shipley in 1881 and served his apprenticeship at Parkinson & Sons of Shipley. He later became a foreman at Bentalls of Maldon, and in 1911 he joined Reavells in the same capacity. In 1915 he became foundry manager of Barford & Perkins, Limited, of Peterborough, and four years later was appointed foundry manager of Allen & Simmonds, Limited, of Reading. In 1922 he joined Guest, Keen & Nettlefolds as foundry manager, a post which he retained until 1936 when he joined Blackstone & Company, Limited, of Stamford. Two years later he was appointed foundry manager of the Tubal Cain Foundry at Cardiff. From 1939 until his retirement in 1951 he was works manager with the Crown Foundry at Northampton. While at Peterborough Mr. Hird initiated the formation of a small branch in the area which was subsequently absorbed into the then newly-formed East Midlands branch. During his long association with the Institute, Mr. Hird has presented a number of papers at branches and was awarded a diploma for a paper "Coal Dust—its Use and Abuse in the Foundry" presented at the London conference in 1929. In the following year he presented an exchange paper to the American Foundrymen's Society. Mr. Hird was a member of the first committee which formed the Wales and Monmouth branch and since his retirement he has helped to form the Northampton and district section, acting as president for the first three years. He is still attending meetings of the section.



British Foundry Medal and Prize

The 1959 British Foundry medal (established by the FOUNDRY TRADE JOURNAL) and which may be given by the Council to the author of the paper adjudged to be the best presented to the Institute during the preceding year, was awarded to Mr. T. C. WILSON in recognition of the excellence of his paper entitled "Mould and Core Production by the CO_2 Process at the Blakeborough Foundries." His co-author, Mr. J. B. HOLLIS, received the British Foundry prize of £10. Mr. T. C. WILSON Commenced his training with J. Blakeborough & Sons, Limited, at the age of 13, and has since served without break for more than 43 years. When 27 years of age, he was appointed assistant to the foundry manager and ten years later took over the post of foundry manager himself. Mr. Wilson is a founder member of the Meehanite training and educational group, of which he has been chairman for the past three years. He has taken part in the presentation and discussion of papers at the International Meehanite conferences and has been a member of the Institute since 1930.

Mr. J. B. HOLLIS was educated at De La Salle College, Sheffield, and obtained his associateship in metallurgy at Sheffield University in 1938. In this year he joined Newton Chambers & Company, Limited, Sheffield, and in 1945 took up a post with International Meehanite Metal Company, Limited, since when he has travelled the country giving guidance and assistance on general foundry practice, technical control and development work. He has assisted during this time in many Meehanite educational training courses for foremen and metallurgists, and in the preparation of papers to the Institute and to the International Meehanite Research Institute. Mr. Hollis is a former member of the Technical Council of the Institute and of the Sheffield branch Council. He is now a member of the London branch.

Diplomas

Diplomas were awarded by the Council to Mr. J. H. Osborn, Mr. T. A. Marsden, and Mr. R. F. Horton, for their paper on "A Modern Foundry for the Manufacture of Steel Castings by New Moulding Techniques" presented at the 1958 annual conference of the Institute; to Mr. H. G. C. King for his paper entitled "An Introduction to Patternmaking in Plastics" presented to the Institute's Scottish branch; and to Mr. G. C. B. Lamb for a paper "Towards Automation" presented as the Institute's sponsored paper to the Institute of Australian Foundrymen.

GKN Dividend Increased

Surplus, before tax, of Guest, Keen & Nettlefolds, Limited, for the 53 weeks to January 3, 1959, was maintained at the same weekly average as in 1957, despite a deterioration in trading conditions in the latter part of last year. Trading results for 1959, however, may not reach those of last year unless there is some marked improvement in general conditions, states the chairman, Mr. K. S. Peacock.

Expenditure of £17,621,627 (£12,767,303) was a record and expenditure sanctioned and outstanding at balance-sheet date was £24,100,000. Since the end of 1951, group fixed assets have increased from £15,930,000 to £78,590,000 (£66,960,000 at end-1957) during which period turnover has trebled to £209,000,000 (£195,500,000 in 1957). Over the same period stock has risen in about the same proportion—from £15,910,000 to £46,430,000.

Maintenance of the group's financial strength, states Mr. Peacock, has been made possible by retention of profits and new finance by way of loan capital and the rights issue. Ordinary stockholders' interest had risen from £40,980,000 at the end of 1951 to £105,800,000 at end-1958. Group net profits expanded to £11,243,342 (£10,199,747) and the dividend is increased from the equivalent of $11\frac{7}{13}$ per cent. to 13 per cent.

News in Brief

A NEW ROLLING MILL which is being installed at the Rogerstone, Monmouthshire, works, of the Northern Aluminium Company, Limited, will enable the company to supply aluminium plate with a roll width of 12 ft.

THOS. W. WARD, LIMITED, Sheffield, are exhibiting equipment worth nearly £38,000 at the Ministry of Works Plant Exhibition opened by Lord Hailsham at Greenford, Middlesex, on June 10. It includes a Smith 22½-ton lorry crane with 130-ft. jib.

POLICE AT LOUGHBOROUGH, LEICS., are investigating the disappearance of 71 bronze bearings worth £79 15s. and weighing altogether 3 cwt. from a store at the Britannia Foundry in Meadow Lane of John Jones & Sons, Limited. A stores check revealed the shortage.

FOLLOWING A SERIES of successful basic roof trials on 300 to 350-ton tilting open-hearth furnaces, the Appleby-Frodingham Steel Company, Limited, have now firmly established the all-basic furnace to the extent that seven furnaces have now been converted.

THE MEEHANITE METAL RESEARCH and Development Association of Africa held its annual conference in Johannesburg on April 8 and 9, when interest was centred mainly on basic cupola operation, standard foundry costing, and the formation of a Meehanite foundry school.

FLEXIBLE DRIVES (GILMAN'S), LIMITED, Carlton House, High Street, Smethwick, Staffs, have recently been appointed sole distributing agents for Tyrolit profile-grinding wheels and shapes and Secur cutting-off discs in the UK, India, Australia, New Zealand, Eire and all Colonies of the British Commonwealth.

WHEN ROTHERHAM RURAL DISTRICT COUNCIL recently informed tenants of pre-war council houses that it was intended to replace existing back-to-back ranges by modern cooking appliances and asked for preferences, 60 tenants indicated that they would prefer electric cookers; 75 chose gas cookers, and four asked for modern combination ranges which are also offered by the Council.

"THE WORKING OF THE CLEAN AIR ACT" will be the subject of a "Brains Trust" to be held at a meeting of the Southern region of the Combustion Engineering Association, at St. Ermin's Hotel, Westminster, London, S.W.1, on Thursday, June 25, commencing 10.30 a.m. Applications to attend should be made to the secretary of the Association at 70, Jermyn Street, London, S.W.1.

BECAUSE OF THE POSSIBLE DANGER of the glass breaking through mining subsidence at Wombwell, the panes have been removed from the windows of the corridor rooms in the county secondary school and replaced with felt. A three-inch gap has been cut in the brickwork to remove the strain, and floorboard in the hall has been replaced with plywood. Various items of damage have already been reported to the governors.

THE MAIN ATTRACTION of the display of Rockweld, Limited, Croydon, Surrey, on stand No. 32 at the Northern Industrial Efficiency Exhibition, now being held at Woodhouse Moor, Leeds, is the company's Autopak automatic welding equipment, and the Comet process of semi-automatic CO_2 welding. Demonstrations of submerged arc and semi-automatic welding are also being given. The exhibition closes to-morrow (June 12).

WORK HAS COMMENCED on a new depot at Warrington Bank Quay, one of 15 similar depots which are being built by the London Midland Region of British Railways, under their "Speed the Freight" plan. Warrington Quay will deal with sundries traffic and combine the present duties of the Bank Quay and Central depots. The new forwarded shed will be a single-span steel structure of 70 ft. wide and will cost approximately £50,000. It is expected that it will take 22 weeks to build the depot.

OWING TO THE DECREASING DEMAND for the company's products at economic prices, the management of Weir Foundries, Limited, announce that it has been decided to complete the closure of their foundries at Thornliebank in June. Redundancy of approximately 90 workpeople is being treated on a length of service basis. Of this number, those with over ten years' service are being offered alternative casual employment. Efforts are being made to interest other industries in the use of the factory buildings, and the Weir group are also giving serious consideration to this. Strenuous efforts are being made to attract new industry to the site.

FOLLOWING THE SUCCESS of an experimental try-out two years ago, the Department of Scientific and Industrial Research is to make again available their DSIR *Technical Digests*. They will be published monthly as a small compendium of ideas, each presented on a separate sheet of paper—this method being adopted to facilitate the passing of items of interest to the appropriate quarter without loss of time by general circulation. Copies of the *Digests* will be available within the next few weeks from the Department of Scientific and Industrial Research, Charles House, 5 to 11, Regent Street, London, S.W.1; the annual subscription being £3 3s. 0d. for sets of 15 items per month—a reduction will be offered for quantity supplies.

SPECIAL SHOWINGS of the company's films have been arranged for the shareholders of the United Steel Companies, Limited. The first took place on the mornings of May 27 and 28 at the Odeon Cinema, Leicester Square, London, when on each morning a 50-min. programme was introduced on film by Sir Walter Benton Jones, chairman of United Steel. This was followed by "Steel Rhythm," a colour film on steelmaking at the company's Steel, Peech and Tozer branch, and "Steel Town" a new colour documentary featuring the works of Samuel Fox & Company, Limited, and the town of Stocksbridge. Further showings of the films will be given in Glasgow, Newcastle, Sheffield, and Manchester during June, and in Birmingham, Bristol, Torquay, Bournemouth and Brighton, in July.

Dr. J. G. PEARCE, a former director of the British Cast Iron Research Association, opened, on May 28, the new laboratory at Bordesley Hall, Alvechurch, the headquarters of the Association. The laboratory, which cost £25,000, has been set up for research into the problems of dust and fume control in foundries. Speaking at the opening ceremony, Mr. G. R. Woodward, manager, intelligence department, stressed the need for clean working atmospheres in foundries. He said that in addition to the industry's own appreciations of the special problem, and recognition of its obligations to maintain good work conditions, the urgency of better fume and dust control had been emphasized by the Clean Air Act. Representatives of Government departments, research organizations, trades associations, educational bodies and users of iron castings were among those who visited Bordesley Hall for the laboratory opening.

Personal

Sir LEONARD SINCLAIR has been appointed a director of Fleming & British American Optical Industries, Limited.

Mr. J. H. STOREY, managing director of the Darwen and Mostyn Iron Company, Limited, has retired after over 40 years with the company.

Mr. PERCY HOLLAND and Mr. GEORGE H. SHELDON have been appointed joint managing directors of the Walmsley (Bury) Group, Limited.

Federated Foundries, Limited, Glasgow, announce that Mr. ALBERT EYDEN, foundry development manager for the group, has been appointed a director of the company.

Mr. ALEXANDER HOOD has been appointed chairman of Blaw Knox, Limited, in the place of Mr. JOHN M. WALLACE, who has relinquished that post in order to lighten his duties. Mr. Wallace will remain on the board.

F. H. Lloyd & Company, Limited, announce that Mr. M. C. LLOYD, assistant managing director of this company, has also been appointed managing director of Lloyds (Burton), Limited, Wellington Works, Burton-on-Trent.

Mr. KEITH DAVID ERSKINE, vice-chairman of Metal Closures, Limited, West Bromwich, has been appointed chairman in succession to Mr. WILLIAM V. ESPERSON, who has retired because of ill-health. Mr. W. R. GAMBLE succeeds Mr. Esperson as managing director.

Mr. G. A. PLUMMER, a director of John Thompson, Limited, water-tube manufacturers, Wolverhampton, has been presented by Sir E. Thompson, on behalf of the directors and staff, with a silver candelabrum on his retirement after 33 years with the company.

Mr. JAMES CESSFORD, foreman for over 30 years with Bruce Peebles & Company, Limited, engineers, Edinburgh, has retired after more than 54 years' with the firm. Presentations were made to him on behalf of the employees, by Mr. George Henderson, sales director.

Metal Industries, Limited, announces that Mr. W. PADLEY, C.M.G., O.B.E., who has been personal assistant to the chairman, Sir Charles Westlake, has been appointed administrative controller. Mr. P. JARDINE, group chief accountant, becomes group financial controller.

Sir GILMOUR JENKINS has joined the board of G.K.N. Reinforcements, Limited, a member of the Guest Keen and Nettlefolds group of companies. Sir Gilmour was Permanent Secretary to the Ministry of Transport and Civil Aviation from 1953 until his retirement from public service this year.

Mrs. R. P. WALLACE, wife of the managing director of Jessop-Saville, Limited, Sheffield, opened the new £20,000 pavilion of the Jessop-Saville Sports Club on Saturday, June 6. The chairman at the opening was Mr. L. CHAPMAN, president of the British Iron and Steel Federation.

Mr. A. J. BROWN, who has been with the company for over 30 years has been appointed secretary of the Express Lifts Company, Limited, of Northampton, Edinburgh, Manchester, etc., in succession to the late Mr. S. R. Smith. His successor as head of the accounts department is Mr. W. H. THATCHER.

Dr. S. C. CURRAN, F.R.S., who is chief of nuclear research at the Atomic Weapons Research Establishment, Aldermaston, is to be principal of the Royal College of Science and Technology, Glasgow, in succession to Sir DAVID ANDERSON. He will take up his new duties in January, 1960.

Mr. W. H. OPHER, a director of Vickers-Armstrongs, Limited, and of certain other group companies, and managing director of Vickers-Armstrongs (Engineers), Limited, has been appointed an additional director of Vickers. Sir JAMES REID YOUNG, having reached normal retirement age, vacated his seat on the board at the conclusion of the annual meeting on June 1.

Mr. LAURENCE S. YOXALL, managing director of Foxboro-Yoxall, Limited, Redhill, Surrey, has joined the board of directors of the Foxboro Company, Foxboro, Massachusetts, USA. In addition, therefore, to controlling and directing the activities of the English company, Mr. Yoxall now becomes directly concerned with the operations of the Foxboro companies in USA, Canada, Holland and Japan.

The new chairman of the Luton branch of the British Institute of Management is Mr. R. C. M. CALLAGHAN, personnel executive and a director of K. & L. Steelfounders and Engineers, Limited, Letchworth, Herts. Mr. Callaghan was course director for the first residential management course run by the Luton branch in 1955/56, and a year later became course director at Pendley Manor, Tring, Herts.

Following the resignation of Mr. A. VAN RHEE as works director of Markham and Company, Limited, Chesterfield, Mr. I. V. N. WILLIAMS has been appointed works manager, with Mr. J. LEAVER as production manager. Mr. Williams has spent his entire working life with the John Brown group, and was works engineer to Firth Brown Tools, Limited, until he joined Markham and Company, Limited, last year.

Mr. T. R. PATTISON has been appointed managing director of Alley & MacLellan, Limited, Worcester, and Mr. A. H. DAVIDSON, managing director of Alley & MacLellan (Polmadie), Limited. Both companies are members of the Glenfield and Kennedy group. Mr. Pattison was formerly general manager of the Worcester company, and Mr. Davidson was until recently a director of the Audley Engineering Company, Limited.

Mr. J. F. ROBERTSON, C.A., a director and group treasurer of the Hawker Siddeley Group, has been appointed to the board of High Duty Alloys, Limited, a member of Hawker Siddeley Industries, Limited. Mr. Robertson joined the group in 1938 and was appointed to the board in 1953. Another new appointment to the board of High Duty Alloys is that of Mr. IAN C. DICK, C.A., who joined the company in June, 1952, as chief accountant and was appointed company secretary in February, 1954, a position which he still retains. Mr. Dick is a member of Federated British Industries Southern Regional Council and the Council of the Association of British Chambers of Commerce.

Obituary

The death has occurred of Mr. FREDERICK CECIL MILLER, who was employed by W. & T. Avery, Limited, manufacturers of weighing, counting, and testing machines, of Birmingham, for 52 years. For most of that time Mr. Miller was employed as a district foreman.

The death occurred last week of Mr. KINGSLEY S. GIMSON, chairman of Gimson & Company (Leicester), Limited, engineers and ironfounders, of Leicester. He was 75. Mr. Gimson was formerly deputy chairman and deputy managing director of the British United Shoe Machinery Company, Limited, Leicester.

Imports and Exports of Iron and Steel in April

The following tables, based on Board of Trade returns, gives figures of imports and exports of iron and steel in April. Totals for the first four months of this year and last are also included.

Total Exports of Iron and Steel

Destination.	Month ended April 30.	Four months ended April 30.	
	1959.	1958.	1959.
	Tons.	Tons.	Tons.
Cyprus	189	2,356	532
Sierra Leone	639	3,598	2,028
Ghana	2,573	5,375	10,464
Nigeria	6,909	21,696	25,773
Union of South Africa	3,458	38,176	18,585
Rhodesia and Nyasaland	1,565	16,363	6,901
Tanganyika	472	4,377	7,083
Kenya	1,418	16,822	8,538
Uganda	378	1,184	2,466
Mauritius	103	1,752	503
Aden	157	1,511	853
Bahrein, Qatar, and Trucial States	195	2,914	3,321
Kuwait	755	17,363	5,183
India	16,214	43,312	55,973
Pakistan	3,756	31,536	12,694
Singapore	1,754	12,475	8,477
Malaya	1,232	5,908	4,186
Ceylon	3,554	11,933	15,975
British North Borneo	151	879	694
Hongkong	6,437	16,436	22,325
Australia	7,367	28,381	31,598
New Zealand	7,502	61,746	31,486
Canada	16,216	65,293	40,589
Jamaica	1,636	7,240	6,991
Trinidad	5,071	20,010	14,253
British Guiana	743	2,564	2,085
Other Commonwealth countries	3,504	11,817	13,707
Eire	5,311	18,336	15,290
Soviet Union	4	6,066	532
Finland	4,076	16,742	9,477
Sweden	11,808	50,729	41,055
Norway	9,155	31,670	31,773
Denmark	7,700	33,413	29,695
Western Germany	8,798	5,850	36,722
Netherlands	7,743	25,779	24,942
Belgium	2,068	8,750	9,494
France	266	1,143	849
Switzerland	765	4,148	2,847
Portugal	1,920	5,607	5,911
Spain	2,735	16,017	8,104
Italy	6,005	14,468	17,585
Austria	323	4,562	976
Yugoslavia	3	1,866	828
Greece	1,107	5,680	4,302
Turkey	279	1,772	1,768
Netherlands Antilles	236	582	981
Portuguese East Africa	116	890	550
Egypt	82	9,216	1,172
Sudan	584	14,083	3,385
Lebanon	20	7,912	112
Israel	1,166	3,252	3,092
Saudi Arabia	136	2,443	2,343
Iraq	6,736	10,649	37,546
Iran	1,689	9,867	10,728
Burma	340	3,359	1,882
Thailand	266	2,706	2,975
Indonesia	866	1,013	1,746
Philippine Republic	309	659	1,147
USA	15,371	26,027	37,241
Cuba	528	2,201	1,767
Colombia	356	3,044	851
Venezuela	5,767	38,024	31,045
Ecuador	140	1,273	430
Peru	148	4,916	882
Chile	127	1,826	659
Uruguay	151	439	631
Argentina	22,353	50,125	67,693
Other foreign countries	20,923	33,920	74,739
TOTAL	242,424	934,041	877,310

Total Imports of Iron and Steel

From	Month ended April 30.	Four months ended April 30.	
	1959.	1958.	1959.
	Tons.	Tons.	Tons.
Rhodesia and Nyasaland	481	2,187	1,514
Canada	964	5,926	3,402
Other Commonwealth countries and Eire	2,686	7,736	11,808
Soviet Union	3,297	58,066	5,189
Sweden	2,188	11,852	8,628
Norway	8,167	27,498	26,567
Poland	369	15	974
Western Germany	9,187	35,759	16,544
Netherlands	18,553	47,286	55,870
Belgium	3,297	35,323	8,985
Luxembourg	419	3,670	2,007
France	954	9,400	6,417
Italy	625	2,061	839
Austria	102	1,728	1,023
Japan	—	1,127	—
USA	5,310	87,870	8,705
Other foreign countries	1,891	1,988	4,451
TOTAL	58,490	339,492	162,923
Iron and steel scrap and waste, fit only for the recovery of metal	370	46,892	866

Exports of Iron and Steel by Products

Product.	Month ended April 30.	Four months ended April 30.	
	1959.	1958.	1959.
	Tons.	Tons.	Tons.
Pig-iron	8,934	31,147	40,314
Ferro-columbium (niobium)	2	17	18
Ferro-tungsten	66	147	456
Other ferro-alloys	579	1,115	1,456
Ingots, blooms, billets, slabs, sheet bars (incl. tinplate bars), and similar primary forms	6,266	2,826	25,140
Pieces roughly shaped by forging*	364	3,170	663
Iron bars, rods, angles, shapes, and sections	74	512	328
Steel bars, rods, angles, sections, and shapes	29,922	126,578	99,297
Iron plates and sheets	8	1,787	113
Universal plates	217	1,591	2,665
Steel plates, 3mm. and under 4.5mm. in thickness	4,403	2,792	16,531
Ditto, 4.5mm. or more in thickness	16,069	71,889	50,316
Blacksheets and blackplate	24,161	108,965	85,604
Hoop and strip	7,307	21,652	24,213
Tinplate	40,453	114,164	155,677
Decorated tinplate	688	901	3,440
Galvanized sheets	8,669	22,720	31,111
Other (incl. tinned sheets, terneplate, and ternesheets)	2,209	4,921	5,692
Railway and tramway construction material	15,247	83,095	58,806
Wire rods of steel (incl. alloy steel)	5,178	12,945	13,450
Wire	9,496	35,078	32,300
Tubes, pipes, and fittings	62,112	286,029	229,720
TOTAL	242,424	934,041	877,310

* The figures for 1959 are not completely comparable with those for previous years.

E. P. BARRUS (CONCESSIONAIRES), LIMITED, 12-16, Brunel Road, Acton, London,W.3, have been appointed sole concessionaires in the United Kingdom and Eire for Greenfield taps and dies.

Mr. HAROLD G. ALLEN will retire from the board of W. H. Allen Sons & Company, Limited, on June 30. He has been a director for over 50 years and a deputy chairman since 1928.

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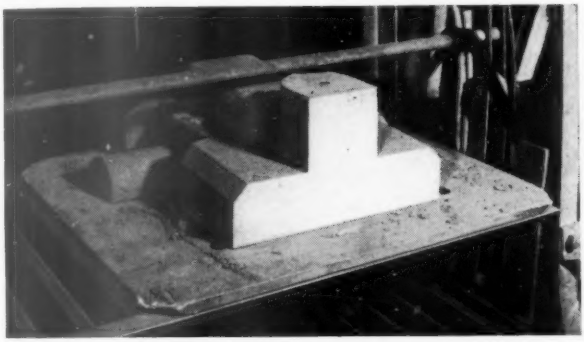

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Raw Material Markets

Iron and Steel

The revised pig-iron prices which came into effect last week are welcomed by the foundries. The improved trade at some of the foundries is maintained, although the amount of business now being obtained is still much below the tonnage required to enable plants to operate fully. The overall improvement may not be large, but it is a step in the right direction and is encouraging to the foundries concerned, particularly those which have for some time past been very short of work, notably in the case of the light foundries. For castings for domestic equipment demands continue to increase and some improvement is reported in the usage of builders' castings. Some of the jobbing foundries are also showing better results, but the textile foundries remain very short of work. In view of the bigger call for light castings the makers of high-phosphorus pig-iron were expecting to receive increased demands, but this has not yet materialized to the extent anticipated on account of the increased quantities of scrap being used at the foundries.

The engineering foundries supplying castings to the motor vehicle trade continue to be well employed, and the quantity of castings called for against current schedules is at least up to recent levels. The machine-tool trade show signs of improvement in its usage of castings, but this is still much below former levels; this position is applicable to other trades, including railways, some of the engineering trades, and collieries. The increased demand for steel continues to necessitate the usage of a larger tonnage of castings and ingot moulds by the steelworks. Appreciable tonnages of low-phosphorus irons are being taken up by the engineering and speciality foundries together with a fairly good tonnage of hematite and some refined irons. There are, however, tonnages to spare in all grades of pig-iron and these are available for export when orders can be secured against the keen competition from makers abroad.

The foundries are well provided with scrap, although arisings of the better and heavier grades of cast-iron scrap are disposed of readily. Foundry coke deliveries are satisfactory, and ganister, limestone, and firebricks are readily available.

The re-rollers welcome the reduction in the price of steel semis. While the improvement at many of the re-rolling mills is maintained, they could undertake a much larger volume of work than that at present being placed. Improved business for small bars and light sections continues, and reinforcing rods are in good demand. Home steelworks have no difficulty in supplying the better demand for billets, etc., and could undertake a much larger tonnage.

Non-ferrous Metals

Weakness on Wall Street, lower US futures quotations, the absence of any positive factors and the rumour that a policy statement on US stockpiling policy was imminent all contributed to turning non-ferrous metal markets dull—and nervous—last week. In this context, the London market for copper became sensitive and selling activity resulted in the quotation shedding a few points. Continental demand is no more than routine and with UK stocks as high as they are it does not require a great deal to put the prices easier.

In the US the price structure remains unchanged with custom smelters quoting 32 cents and producers 31½ cents a pound. At these levels, demand is brisk for pre-July delivery and there is no apparent movement to raise the price even though dealers are asking 33 cents a pound. A major influence on market activity on the other side of the Atlantic is the negotiations taking place on the renewal of the labour contracts. These, presumably, have now passed their preliminary phase, but it is still unknown what the unions mean by their demand for "substantial" increases in wages and fringe benefits. If the negotiations now proceeding in the steel industry are anything to go by, the negotiations will be long drawn out affairs so that added uncertainty is injected into the overall picture as to what will be done at the end of the month, if there is no agreement.

Tin is a better market than the other non-ferrous metals. Demand in London and in the East is satisfactory, while, in the United States, buying from tinplaters is beginning to make itself felt. In London the price is approaching £790 a ton and in the US it is nearly $1.05 a pound.

Lead continues dull in London, with the price still hovering around £70 a ton, compared with the US quotation of 12 cents a pound, equivalent to £96 a ton. Zinc is a better market than lead on both sides of the Atlantic. In fact, buying pressure on high-grade metal has depleted available supplies and the outlook is satisfactory. Indeed, if the US steel industry's negotiations are successfully concluded, a rise in the US price seems inevitable. At present the price is called 11 cents a pound.

New Catalogues

Electric Die-casting Furnace. In publication No. FD 30, the Morgan Crucible Company, Limited, Wandsworth Works, Point Pleasant, London, S.W.18, illustrate and describe the type E.D.F. Mk.11 Birlec-Morgan electric die-casting furnace, which the company has developed in association with Birlec, Limited, of Birmingham. This furnace is of the holding type of 300 lb. capacity. The temperature control is fully automatic and a time switch is incorporated so that the furnace is ready for immediate operation when the work shift arrives. The basin, of Salamander refractory, is heated by resistance wires. This four-page leaflet carries full data as to operational characteristics.

Fabric-type Dust-collectors. In publication 46, Keith Blackman, Limited, Mill Mead Road, London, N.17, cover a range of fabric-type dust-collectors known as the T.F. series. The units are well adapted for foundry use, as the series is available in sizes for handling from 2,000 to 50,000 cub. ft. of dust-laden air per minute—a range sufficiently wide to cover the requirements of the industry. The basic element of a unit construction is 16 filter bags giving a total filtration area of 200 sq. ft. The complete range is obtained (with the exception of the smallest unit) by stacking two or more basic elements together, a system making for compactness and flexibility. The dust so collected is deposited in either a sack, bin, or box, whilst the shaking gear is either hand operated or motor driven. The folder gives a wealth of detail about the system.

Latest Foundry Statistics

Ironfounding: The Council of Ironfoundry Associations states that the following number of ironfoundry workers were employed in the United Kingdom during the week ending April 4: Males 114,889: females, 8,443, making a total of 123,332. This shows a reduction of 1,680 over a month ago.

Baker Perkins Foundry Machinery at work.....

at R. & A. Main Ltd.

R. & A. Main Ltd. use this 'Medium' Rotary Table Shot Blast Machine for a wide range of application at a high production rate. The special control desk includes signal lights, 24 volt current socket for inspection and ammeters indicating the shot output of the patented bi-phase impellers. The wiring circuit is arranged for automatic operation to cut out human errors.

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HISTORICAL NOTE

R. & A. Main Ltd. were established in Glasgow in the 1870's. Following the amalgamation with Thomas Glover & Co. Ltd. in 1897, extensive sites were acquired at Edmonton and Falkirk. They produce a wide range of domestic appliances including the 'Century' gas cooker, the 'Century' gas heater and the Main No. 36.c. Refrigerator — the first to carry a ten year guarantee.

Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

June 10, 1959

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2, 10-ton lots or over: Middlesbrough, £21 6s. 0d.: Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.40 per cent. P, 6-ton lots or over, £23 5s. 0d., delivered Birmingham, £23 10s. 0d., delivered Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 6s. 6d.; South Zone, £25 9s. 0d.

Refined Malleable.—P, 0.10 per cent. max.: North Zone, £26 6s. 6d.; South Zone, £26 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent., 6-ton lots or over: N.-E. of England (local iron), £24 14s. 0d.; Scotland (Scotch iron), Zone S.1, £25 0s. 6d.; Sheffield, £26 2s. 6d.; Birmingham, £26 11s. 6d.; Wales (Welsh iron), £24 14s. 0d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leicestershire, in 6-ton lots or over.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £41 0s. 0d. to £43 10s. 0d., scale 15s. 0d. per unit; 75 per cent. Si, £56 10s. 0d. to £60 10s. 0d., scale 15s. 0d. to 16s. 0d. per unit.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 8s. 9d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 11s. 9d. per lb. of W.

Ferro-chrome (6-ton lots and over).—4/6 per cent. C, £77 0s. 0d. to £81 0s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; over 6 per cent. C, £74 10s. 0d. to £77 10s. 0d., basis 60 per cent. Cr, scale 26s. 0d. to 27s. 6d. per unit; 2 per cent, C,* 1s. 7½d. to 1s. 10½d. per lb. Cr; 1 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 0.15 per cent. C,* 1s. 9d. to 2s. 0d. per lb. Cr; 0.10 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 9¾d. to 2s. 0¾d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £245 0s. 0d.; 96/98 per cent., £275 0s. 0d.

Ferro-columbium.—65/72 per cent., Cb + Ta, 19s. 9d. per lb., Cb + Ta.

Ferro-manganese (standard).—78 per cent., £66 0s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t., 100 tons & over, £31 15s. 6d.; tested, 0.08 to 0.33 per cent. C, 6 to 35 tons, £33 15s. 6d.; **hard** (0.41 to 0.60 per cent. C), under 10 tons, £34 17s. 0d.; **silico-manganese**, under 10 tons. £43 16s. 6d.; free-cutting, under 10 tons, £36 14s. 6d. SIEMENS MARTIN ACID (under 10 tons): Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

Billets, Blooms, and Slabs for Forging and for Stamping (under 10 tons).—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

FINISHED STEEL

Heavy Plates and Sections (under 10 tons).—Ship plates (N.-E. Coast), £42 2s. 0d.; boiler plates (N.-E. Coast), £44 12s. 0d.; floor plates (N.-E. Coast), £43 11s. 0d.; angles (N.-E. Coast), £39 16s. 6d.; joists (N.-E. Coast), £39 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £39 1s. 0d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, 100 tons and over, £38 0s. 0d.; uncoated strip mill coils, hot rolled, under 3mm. to 12g., 25 tons to under 50 tons, £43 16s. 0d.; black sheets (hand mill), 24g., 10 tons and over, £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £66 10s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £68 10s. 0d.; nickel-chrome, £99 4s. 0d.; nickel-chrome-molybdenum, £111 17s. 0d., in lots of 5 tons to under 10 tons.

NON-FERROUS METALS

Copper.—Cash, £235 10s. 0d. to £235 15s. 0d.; three months, £234 10s. 0d. to £234 15s. 0d.; **settlement**, £235 15s. 0d.

Copper Tubes, etc.—Solid-drawn tubes, 2s. 4d. per lb.; rods, 253s. 0d. per cwt. basis; 20 s.w.g., 288s. 0d. per cwt.

Tin.—Cash, £788 10s. 0d. to £789 0s. 0d.; three months. £790 10s. 0d. to £791 10s. 0d.; settlement, £789 0s. 0d.

Lead (Refined Pig).—First half June, £69 5s. 0d. to £69 7s. 6d.; first half September, £71 0s. 0d. to £71 5s. 0d.

Zinc.—First half June, £77 10s. 0d. to £77 12s. 6d.; first half September, £76 15s. 0d. to £77 0s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £112 15s. 0d.; rolled zinc (boiler plates), all English destinations, £110 10s. 0d.; zinc oxide (Red Seal), d/d buyers' premises, £94 0s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 10¾d. per lb.; sheets to 10 w.g., 200s. 6d. per cwt.; wire, 2s. 8¼d.; rolled metal, 200s. 6d. per cwt.

Brass (Brazing).—BS1400, B3 (65/35), £155; B6 (85/15), £207.

Brass (High Tensile).—BS1400, HTB1 (30 tons), £186; HTB2 (38 tons), £203; HTB3 (48 tons), £215.

Gunmetal.—BS1400, LG2 (85/5/5/5), £192; LG3 (86/7/5/2), £202; G1 (88/10/2/½), £256; (88/10/2/1), £243.

Phosphor Bronze.—BS1400, PB1 (AID released), £290 per ton.

Leaded Phosphor Bronze.—BS1400, LPB1 (1060), £214 per ton.

Phosphor Bronze Strip, etc.—Strip, 292s. 3d. per cwt.; wire, 4s. 1⅝d. per lb.; rods, 3s. 4¼d.; tubes, 3s. 4¼d.; chill cast bars: solids 3s. 3¾d.; cored 3s. 4¾d. (CHARLES CLIFFORD, LIMITED.)

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 9¾d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 2¾d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 1¾d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 3d. per lb. Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver, ex-warehouse, £77 0s. 0d. Nickel, £600 0s. 0d. Aluminium, ingots, £180 0s. 0d.; aluminium bronze (BS1400), AB1, £228; AB2, £243.

* Average 68-70 per cent.

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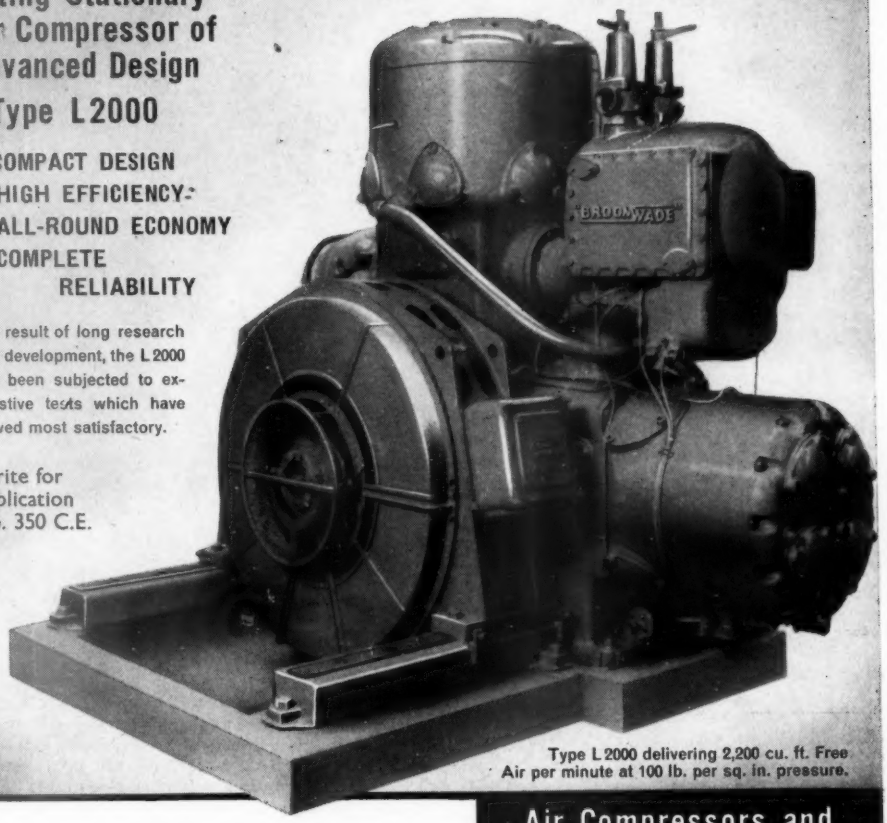

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The trade knows Jack Masters—as it knew his father and grandfather before him (and now his son is carrying on the Masters' tradition). Jack Masters has been 15 years with Enfield Rolling Mills—one of Britain's largest copper refiners. "*Results* are what interests me," he says, "and here's a case in point. Automation is speeding our production all round—so the furnaces have just *got* to cope with more input. This furnace was designed to handle 21 tons of copper billets an hour: we've pushed up the temperature and raised her output to nearly *double* that figure. And that's not the limit! How did we manage? Carborundum's refractories, of course: CARBOFRAX* for the muffle arch, and REFRAX* for the combustion chambers."

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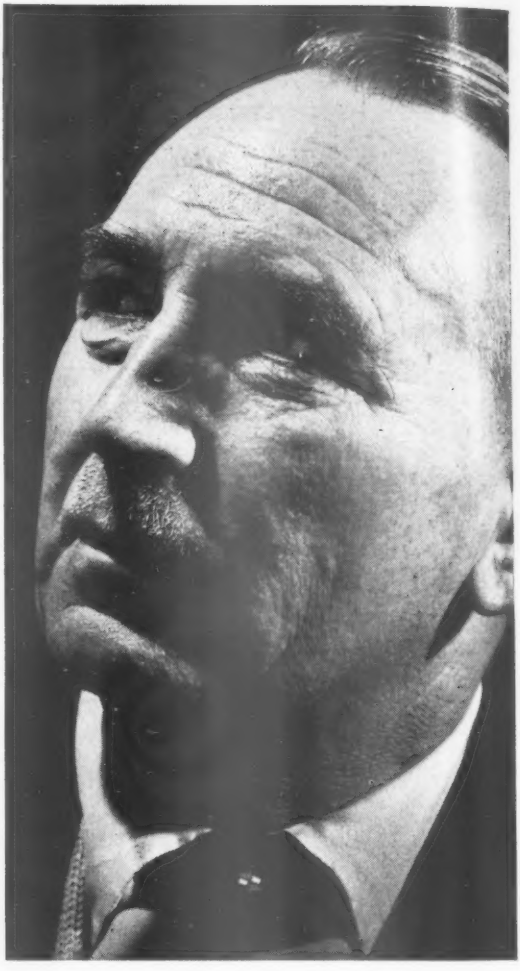

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Staffordshire Landscapes

Scenes such as these are common in South Staffordshire. A century lies between the prime years of the foreground, and the present day development behind.

Though the occupants of the new houses may give little thought to the sunken canal boat, the progress which began its decay may also have brought their forefathers to the district to share, and to play their part in the swelling industrial activity which was growing from the pioneering spirit of the early Iron Masters.

Progress in Staffordshire, bringing almost every major improvement in the technique of iron-founding since 1700, is apparent in the landscape of the County as well as in its products.

For almost a century and a half Pig Iron has been manufactured at Darlaston Iron Works. Today, the most modern methods of metallurgical control of raw materials and the finished product, enables them to supply Pig Iron of consistent uniformity to the most exacting specification.

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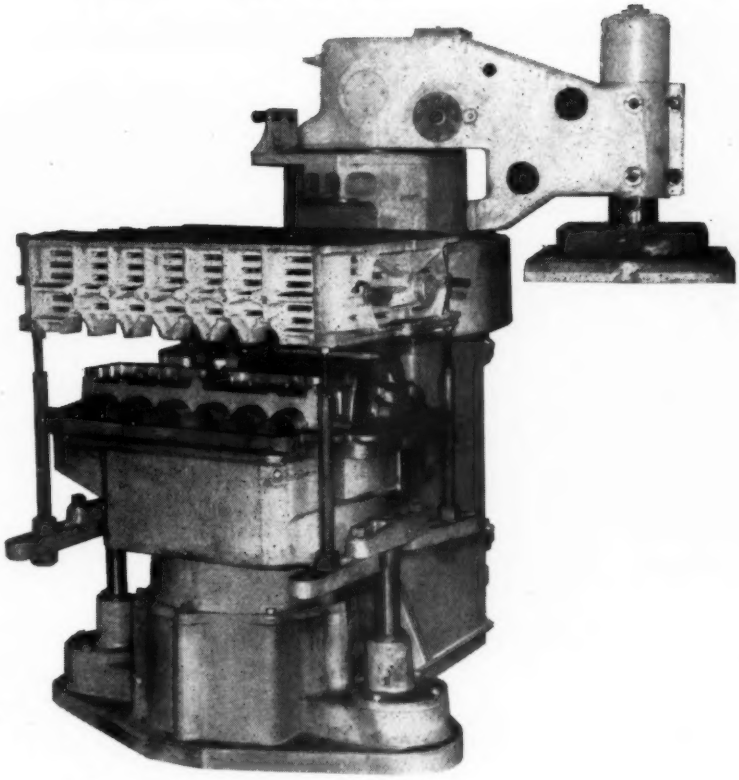

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Roper

WET TYPE SPARK ARRESTERS

Designed by experts—the example shows the simple but scientific approach to a vital problem.

Photographs by courtesy of
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Above:

View showing Wet type Spark Arresters with Inspection Platform serving 17-ton per hour Cupolas.

Left:

This highly efficient Spark and Dust Suppressor is provided with a Spray Jet giving double water curtain as illustrated.

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The **COROVIT** cold-setting technique

In making the cores (which weigh about 8 tons) for this Turbine Blast Furnace Blower half casting, Messrs. Richardsons Westgarth (Hartlepool) Ltd., also made a discovery. They found that conventional loam-sand methods were far outclassed by the new cold-setting core technique made possible by COROVIT. In addition to the superior finish on the cored surface of the casting, outstanding savings were made as follows, (approximate figures):

50% of coremakers time • 60% of stoving time • 60% of decoring time

8 cwts. off the weight of the 9 ton casting, due to much greater accuracy of cores.

In a Seaton Carew and Erith yellow sand mixture 3% by weight COROVIT was used. A 3 inch wall-thickness of COROVIT-bonded sand is extensively used on these cores.

Ask FORDATH about COROVIT

(Protected by British Patent No. 653,530 and Application No. 17262/55)

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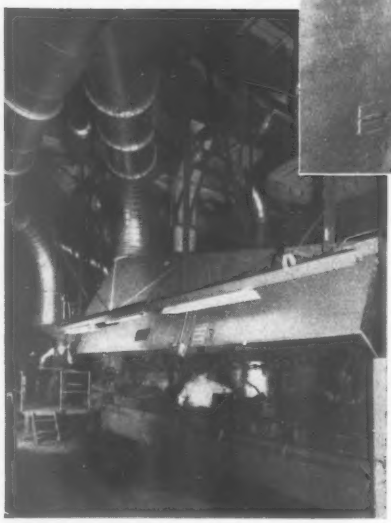

Exhaust hoods at the clamps-off and castings removal stations. Photographs reproduced by permission of the Ford Motor Co. Ltd.

The Holmes-Schneible System installed at the new Thames Foundry of the Ford Motor Co. Ltd., removes more than half a million cubic feet of dust and fume laden air per minute, thus ensuring optimum working conditions twenty-four hours per day. In addition over 200,000 cubic feet of clean air per minute are supplied at certain points as 'compensating air' to maintain the foundry heating balance

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—says independent test report

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Built-in dust-extraction unit, Sound-Absorption equipment, Focused Lighting plus several other special features.

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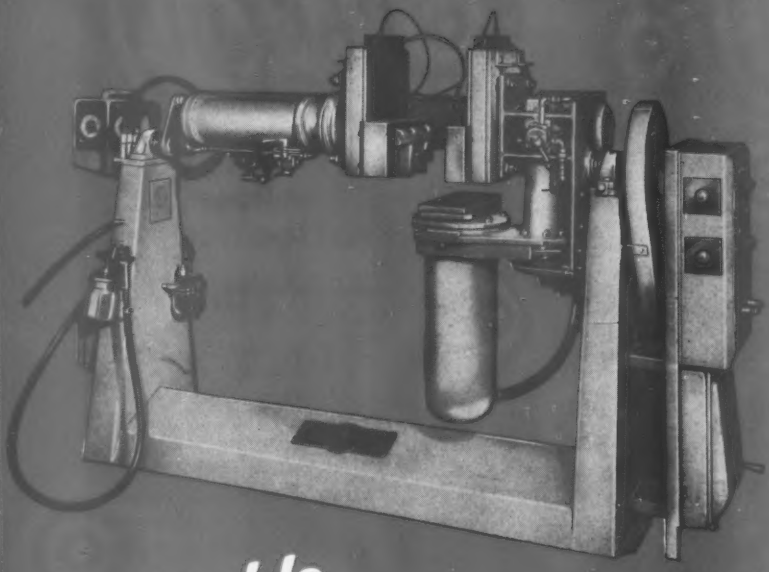
A1

Now here-the SHALCO MCM SHELL CORE BLOWER



...it is causing a major revolution in America and is now available to British Foundrymen

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SHALCO Shell Core Blowers are rapidly outdating all other methods of Core production throughout the United States . . . and no wonder, for in addition to substantially reducing production and material costs, they also possess the following further advantages:

Finished one piece cores are produced in 30-50 seconds ready for placing in mould. Core driers and ovens are eliminated. Investment and curing is completely controlled. No venting of cores is required . . . no irons or wires . . . cores have high permeability and strength. Castings are smoother and cleaner—less fettling and finishing is needed. Good collapsibility of cores after casting. Simple operation. Low maintenance costs. Compact and complete—no other equipment required.

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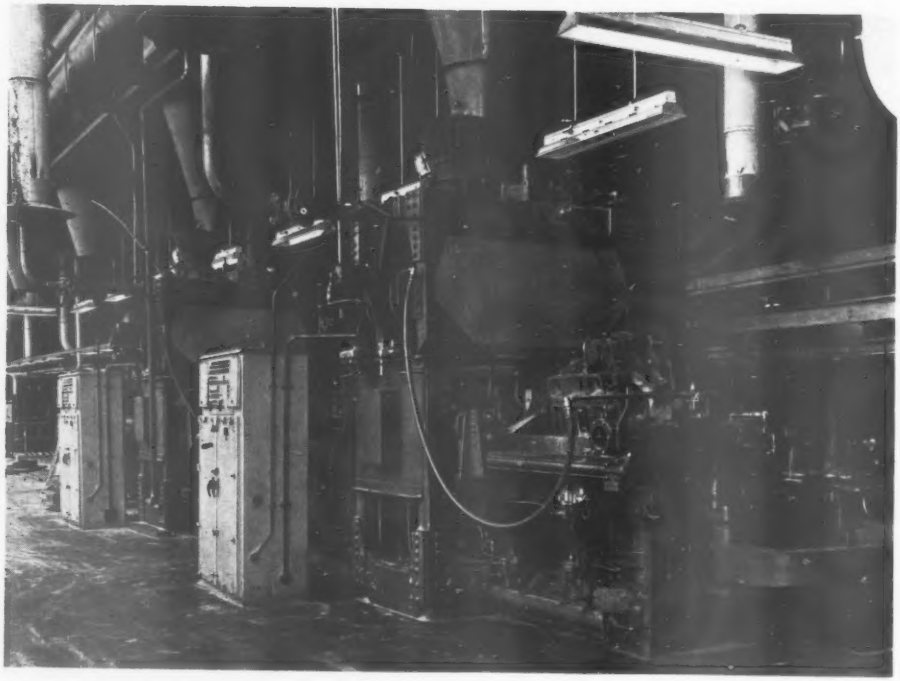

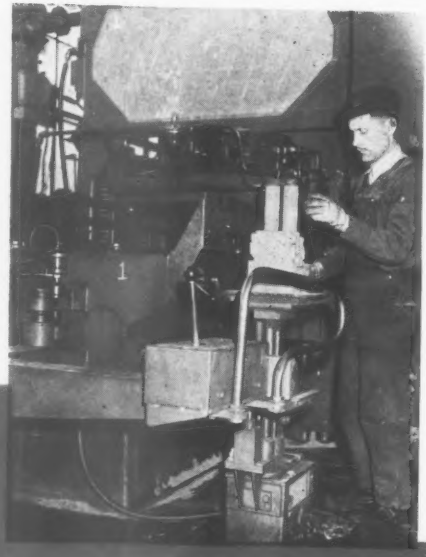

Two of four No. 300 Twin Station Automatic Coreblowers in Ford Thames Foundry. These Core Shop Giants make light work of cylinder barrel cores.

No. 300 incorporates central combined blow and high pressure squeeze, with automatic four-way side draw on each rollover stripping station for high production of deep complicated cores up to 125 lbs. each.

British patent pending.

Coreblowers were only a part of our contract —we supplied the twin 200-tons per hour Sand Distribution and Spillage Systems.

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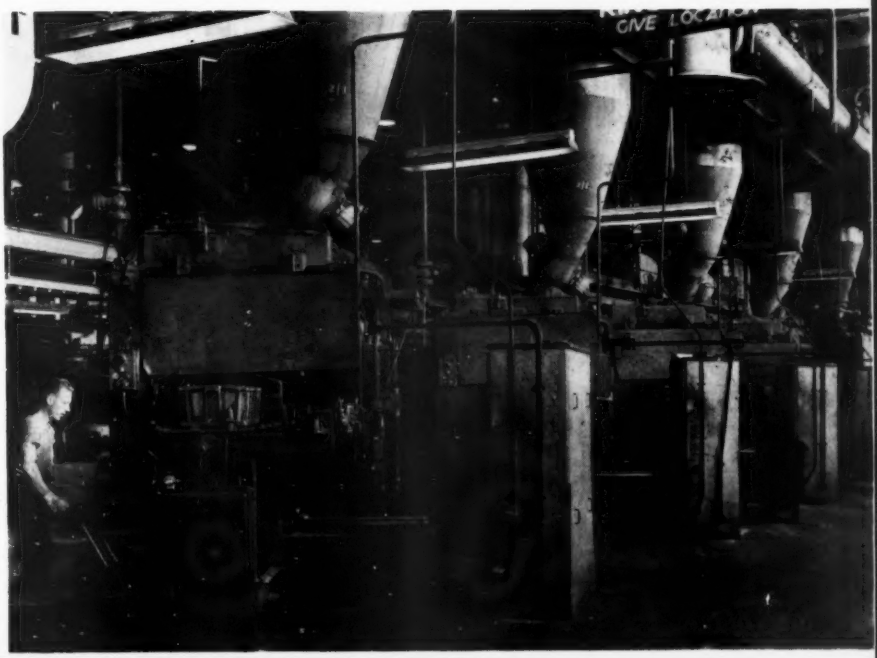
Ford Thames Foundry also uses five No. 220/530 Automatic Core Blowers for simpler cores at fantastic speeds, and fifteen additional No. 530 Rollover machines are incorporated in other production lines.

The No. 220/530 "Package Unit" is capable of blowing cores up to 125 lbs. weight, and is rated at a maximum output of up to 240 cores per hour—with one man!



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It saves labour and time, increases safety and gives a high casting yield.

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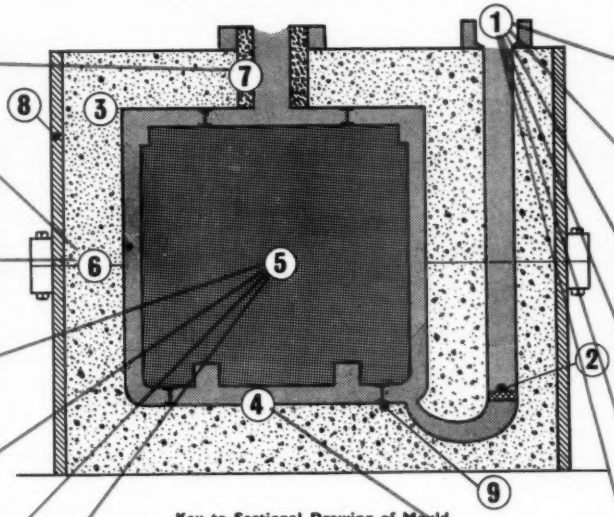

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Key to Sectional Drawing of Mould

		Sand for booklet No.
1	Metallurgical Control use of Fluxes.	3
2	Clean Metal by using Ceramic Strainer Cores and Discs.	4
3	Coal Dust additional to Facing and Backing Sand.	1
4	Silverskin Blackings, Plumbago and Mould Dressings.	1
5	Cores using Crulin and Crudol Core Binders (Oil Bonded, Air Setting Cereal or CO.2 Binders).	2
6	Moulds Parted with Beecro Silica Free Parting Powder or Beecrol Parting Liquid.	1
7	Casting Feeding with Alsica Exothermic Feeder Heads.	4
8	Moulding Boxes supplied by B.F.U.	5
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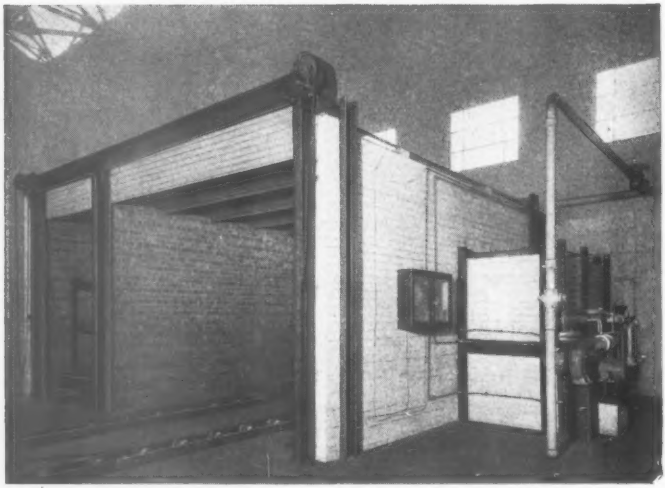

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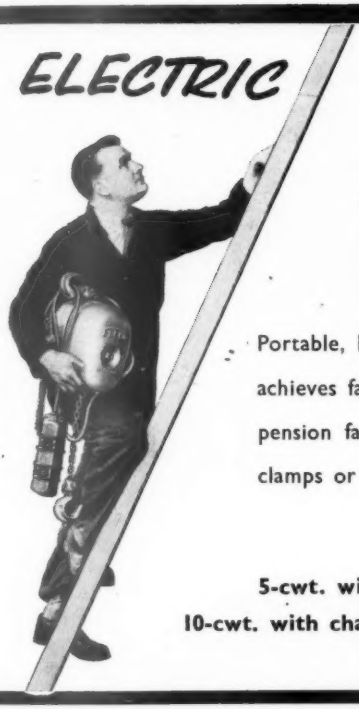
FROM £70 (CARR. PAID U.K.)



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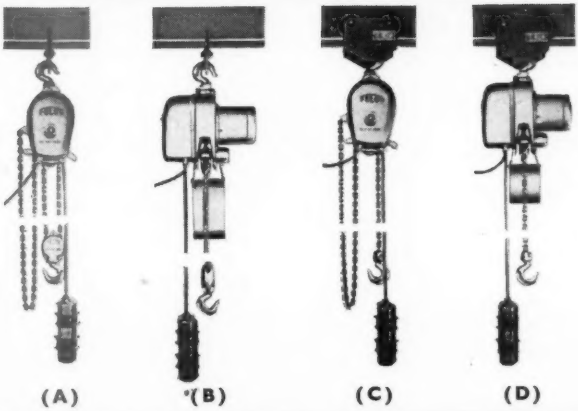

(A) 10-cwt. Baby 60 suspended on a girder clamp.

(B) 10-cwt. Baby 60 with chain collecting box, suspended on a girder clamp.

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(A) (B) (C) (D)

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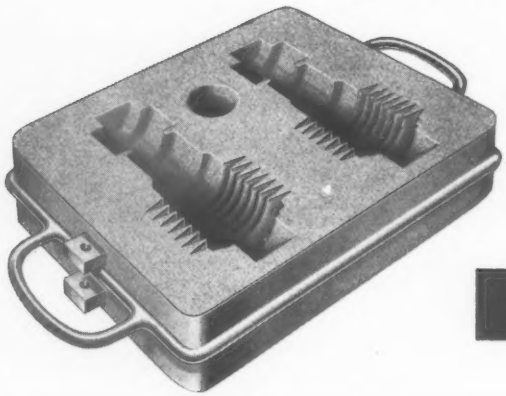

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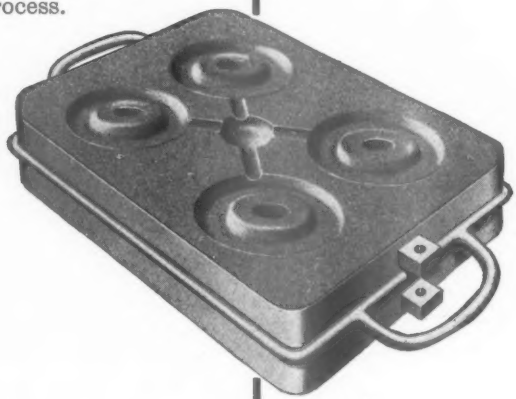

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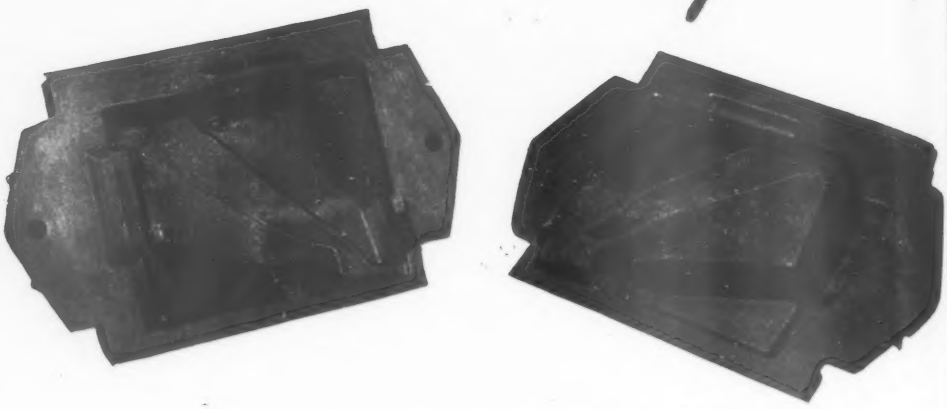

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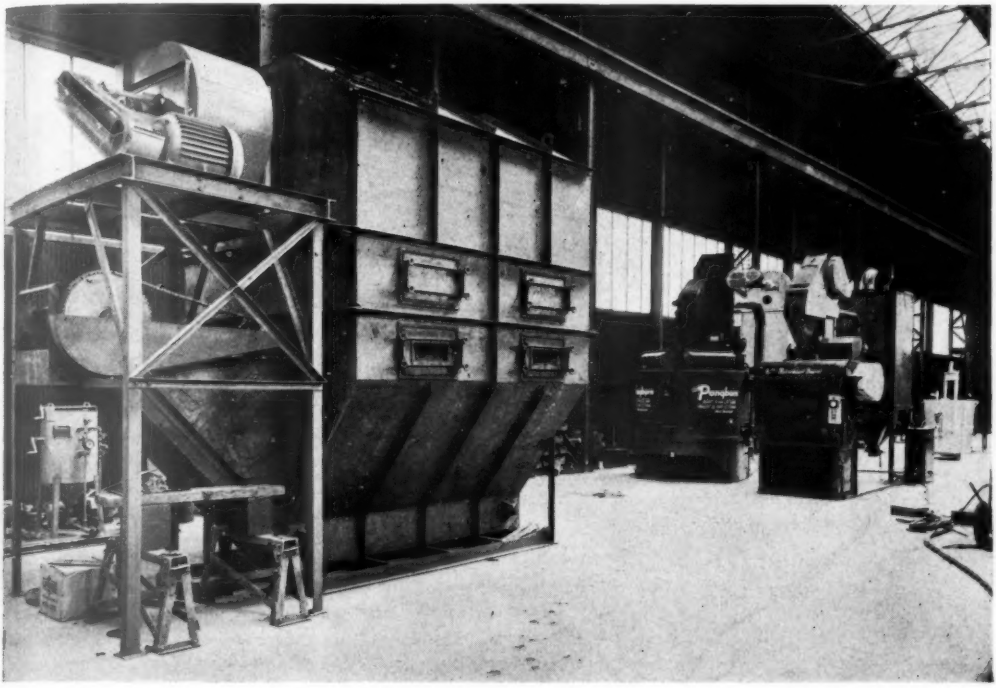

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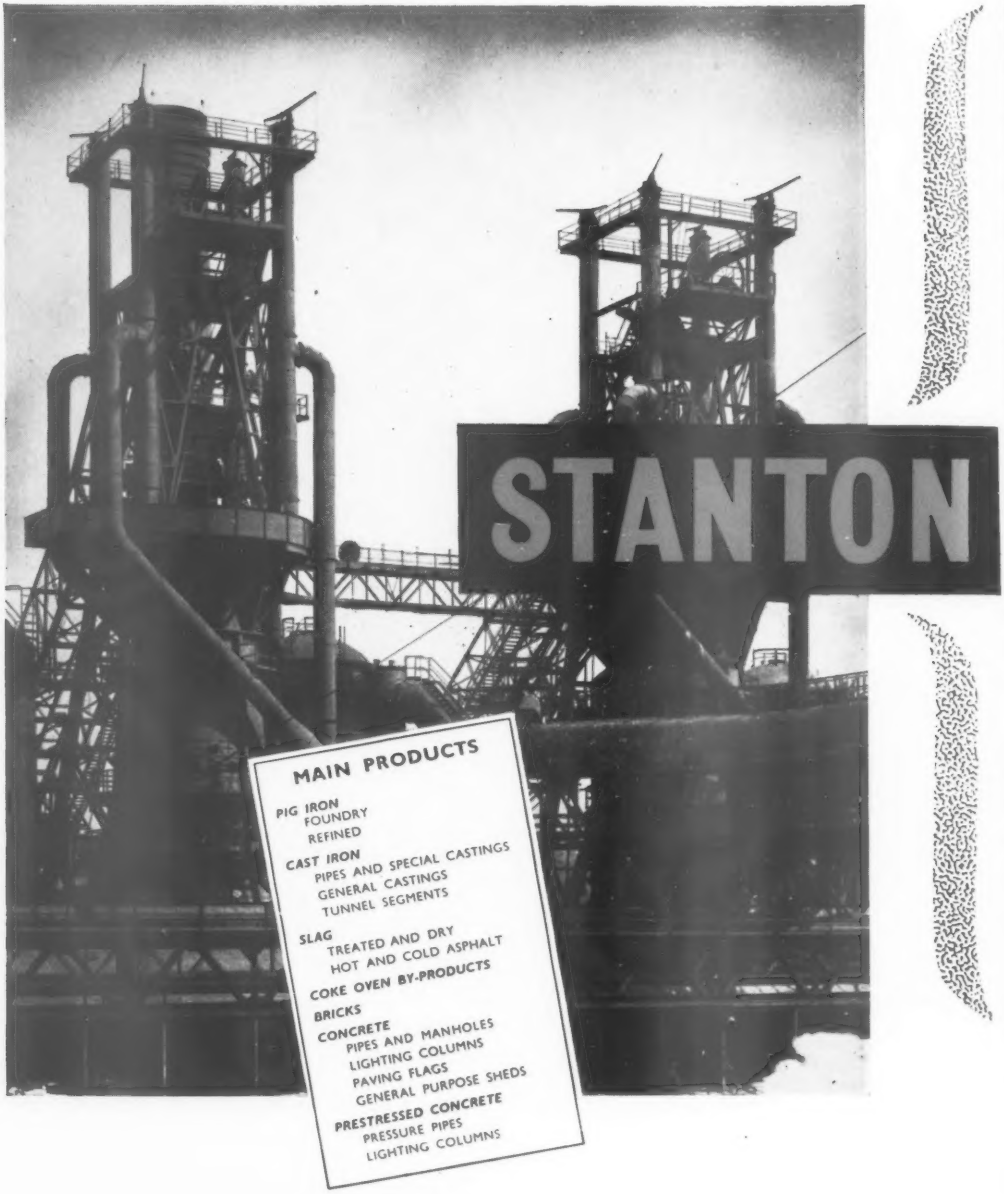

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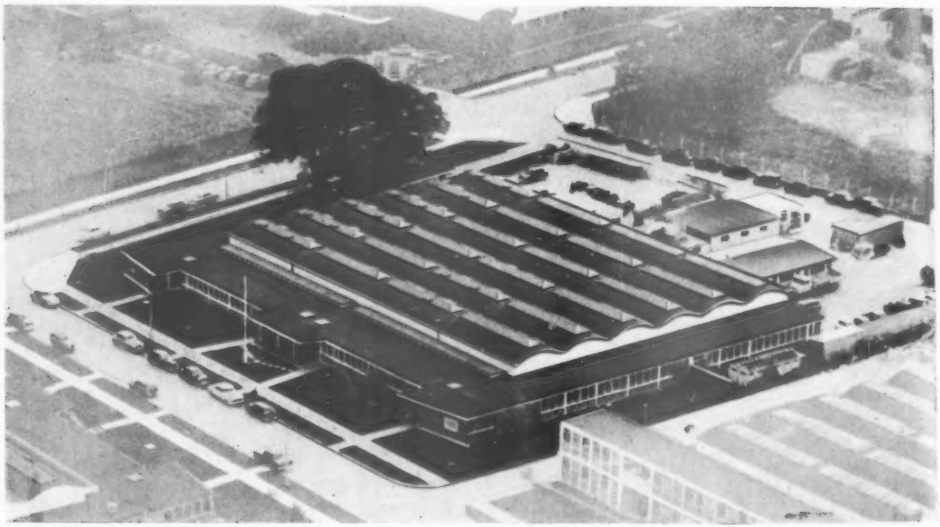

Owing to the recent events in our machine shop, which have been adequately reported in the daily Press, the Management has decided to concentrate upon the extension of the pattern side of our business in future, and we place at your disposal our unique facilities for precision patternmaking.

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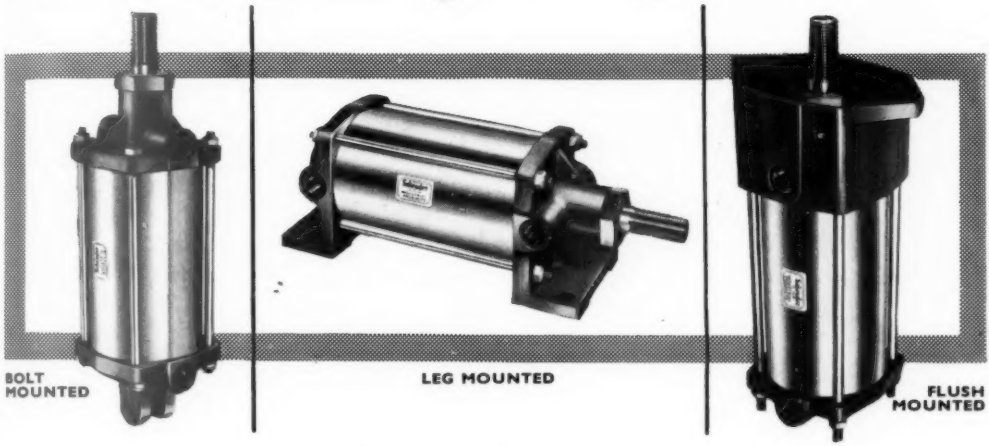
make light of heavy work...



...and eliminate manual lifting, lowering, pushing or pulling.

Manual operations involving heavy movements are tiring to the operators and often a drag on production speed. Schrader Air Cylinders carry out these movements with a pre-determined force of stroke and can be controlled manually or fitted to synchronize with the cycle of machine operations.

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Thor ARMSTRONG WHITWORTH

Safety AIR MOTOR-DRIVEN HOISTS

Armstrong Whitworth Air Motor-Driven Hoists provide a SAFE and RELIABLE solution to your Materials handling problems. The Motor is rigidly secured to the heavy steel cast Central Frame which takes the entire load strain. Starting, stopping, reversing and speed regulating are controlled by the Control Chains. The hoist operates smoothly, and without the usual jerk found in throttle operated air hoists.

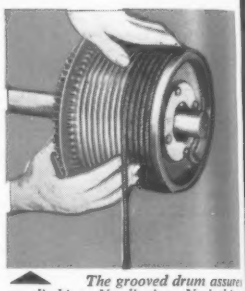
POSITIVE AIR BRAKE

A positive air brake which releases when the throttle opens is automatically applied as the throttle closes. The load cannot fall if the air line breaks or the compressor shuts down while the hoist is in operation.

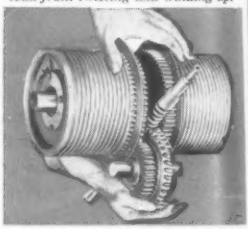
EQUIPPED WITH WORM GEAR DRIVE

The positive worm, driving in both directions, in addition to the shifting eccentric used in the motor, permits the location of the load in any exact position. This ability to locate the load is absolutely necessary in handling foundry flasks, setting up automobile bodies in position on the assembly track, or setting up work for machine operations.

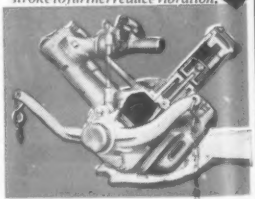
R57



The grooved drum assures no climbing. No slipping. No jerking. No frayed and dangerous cable. The cable ends are widely separated when the cable is down, thus preventing the load from twisting and winding up.



The motor: Famous Armstrong Whitworth Close-Quarter type Motor with non-leakable seat throttle. Double-acting pistons cushioned at both ends of stroke to further reduce vibration.



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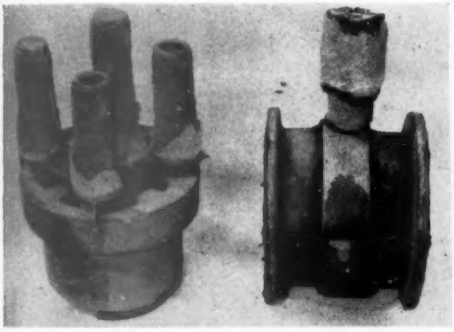
Who are the FEEDEX FANS?

JOHN WILLIAMS AND SON LIMITED CARDIFF

Yet another Feedex fan! More and more firms are using Feedex methods for better castings at reduced cost. Shown here are examples of the excellent results that John Williams and Son Ltd. have obtained with Feedex, Type 3. No wonder more firms are becoming Feedex fans every day.

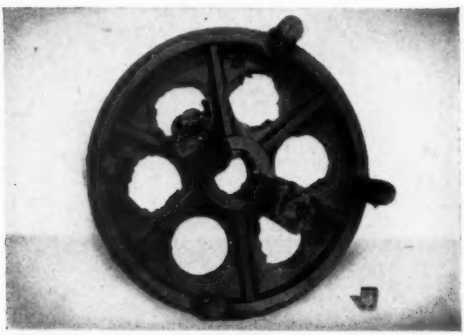
Gear Box in S.G. Iron. Weight: 224 lbs. Has to be heavily machined.



(Left) Commutator Head in S.G. Iron. Weight: 56 lbs. (Right) Gantry Crane Wheel in H.D. Iron to Grade 20. Weight: 104 lbs. Castings have to be machined all over.

Turbo-charger Casting in Ni Resist 2B, tested to work at 40,000 revs. per minute at 750 deg. C. Weight: 20 lbs.

Main Housing Cover in S.G. Iron. Weight: 1,153 lbs. Has to withstand high stresses.



Gear Blank. S.G. Iron. Weight: 232 lbs. High yield achieved.

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"Baltiseed" FOUNDRY PRODUCTS

DID YOU SEE US at the FOUNDRY EXHIBITION?

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If you did not see us, there is no reason why you should not drop us a line arranging for our Representative to call on you.
His technical experience is at your free disposal, and he will advise on any matter relating to Foundry Sand Binders.

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The New Single Lever Redford No. 1A still retains its STRENGTH and SIMPLICITY, but reduces operational time, maintenance costs and labour fatigue. With FOUR operations in ONE production is even higher.

If you make cores up to 2 lbs. you should use a Redford. It will make them quicker and cheaper than any comparable machine on the world market today.

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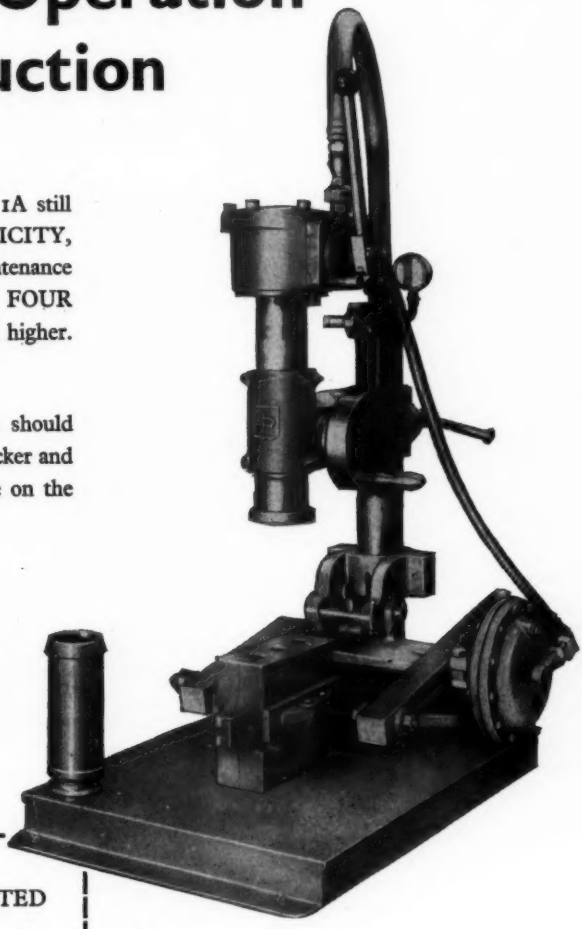


To BRITISH RONCERAY LIMITED

Please send me further details of the Redford Core Blower/Redford Pneumatic Clamp without obligation.

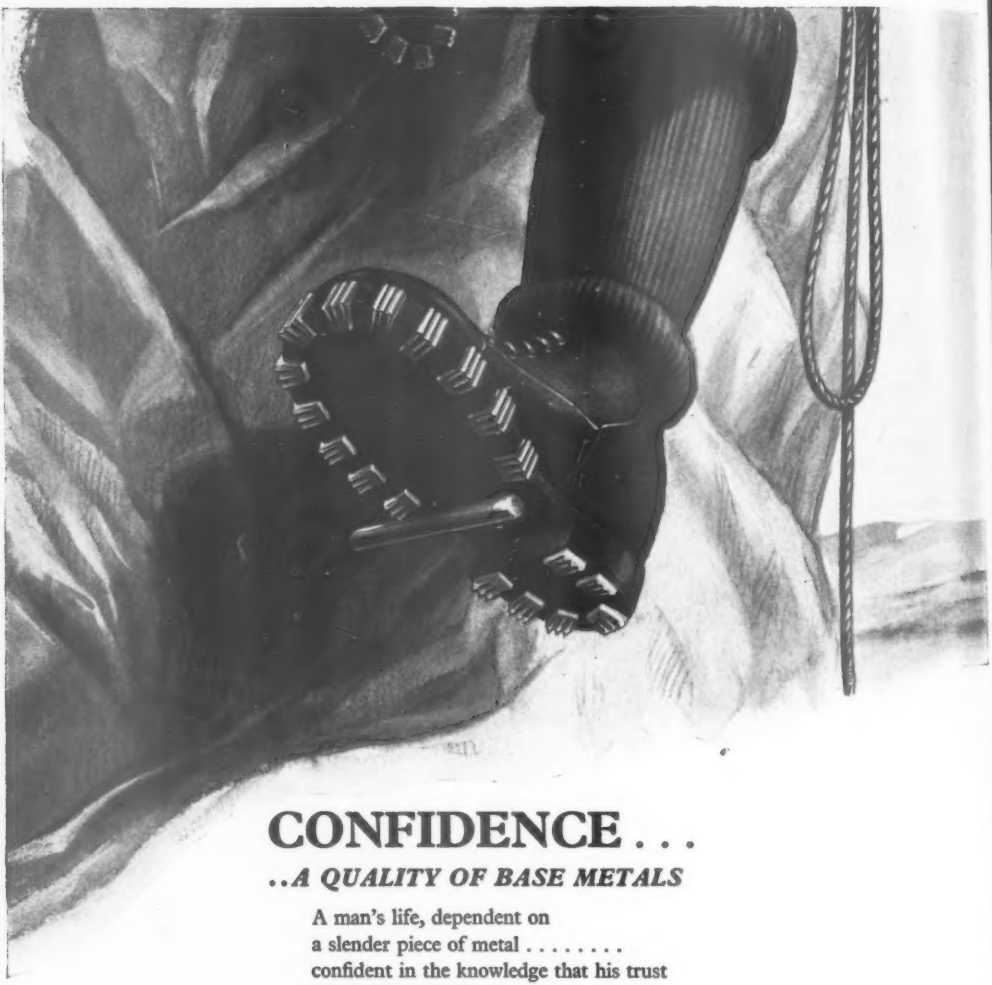
Name .....

.....

Just attach to one of your letter-headings and post to-day to:—

BRITISH RONCERAY LIMITED

14, WOLSELEY ROAD, SHEFFIELD 8



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confident in the knowledge that his trust
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in "Royds" Non-ferrous Ingots.
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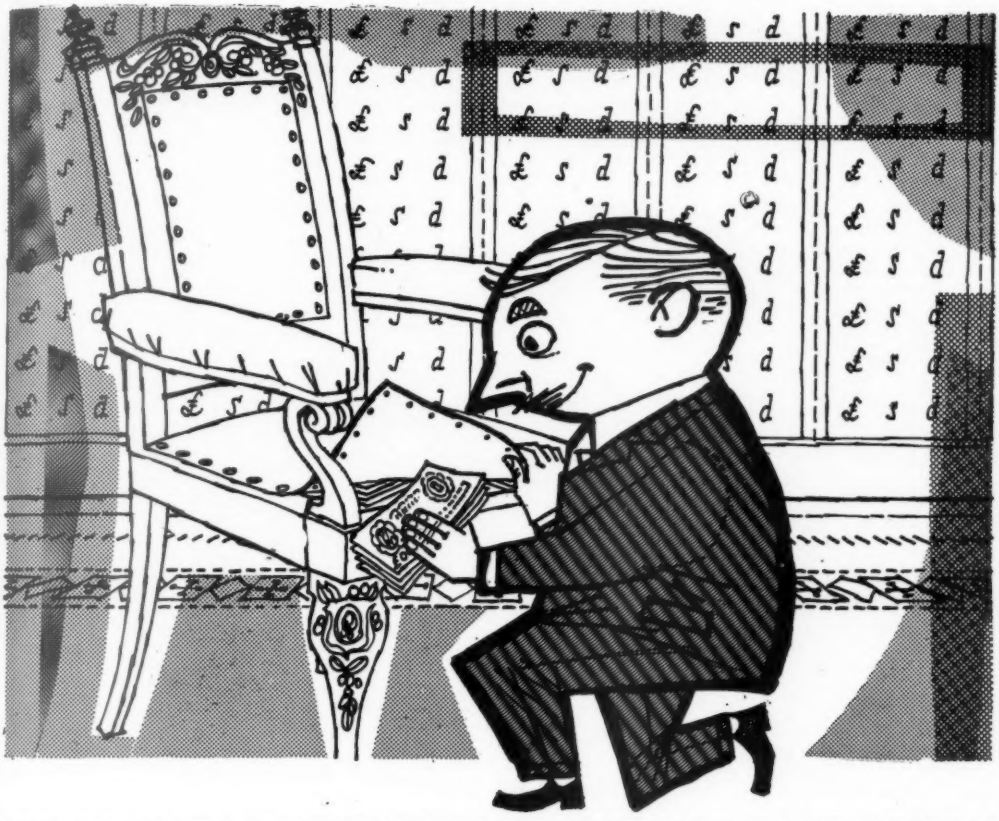

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You will be able to count the money you save when you use Cataset 300G Air Set Resin Binder. The little fettling required considerably reduces labour, the rapidity of the air cure saves time and that means MONEY saved. Mould faces bonded with Cataset 300G cure without the application of external heat, though the use of portable dryers will give a quicker cure. Cured surfaces will be very hard and smooth, will strip easily and produce castings of exceptional high standard and accuracy. If you will let us come into your foundry for one day we will prove the remarkable properties of

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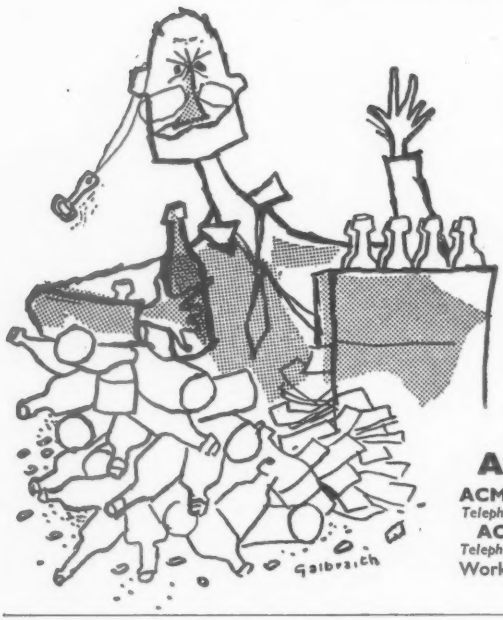
IS THERE A BOTTLENECK IN YOUR WORKS?



If so, you'd be wise to write to us, for our designers just love to sort out little problems such as yours.

We here, sometimes think our designers have the instinct of an R.S.M.; with his "I'll move yer" and "I'll sort yer out", but whatever instinct they have, its combined with a thorough technical knowledge of all the problems of Mechanical Handling, so we're satisfied with them.

You will be too, why not drop us a line—ask for Catalogue 300.

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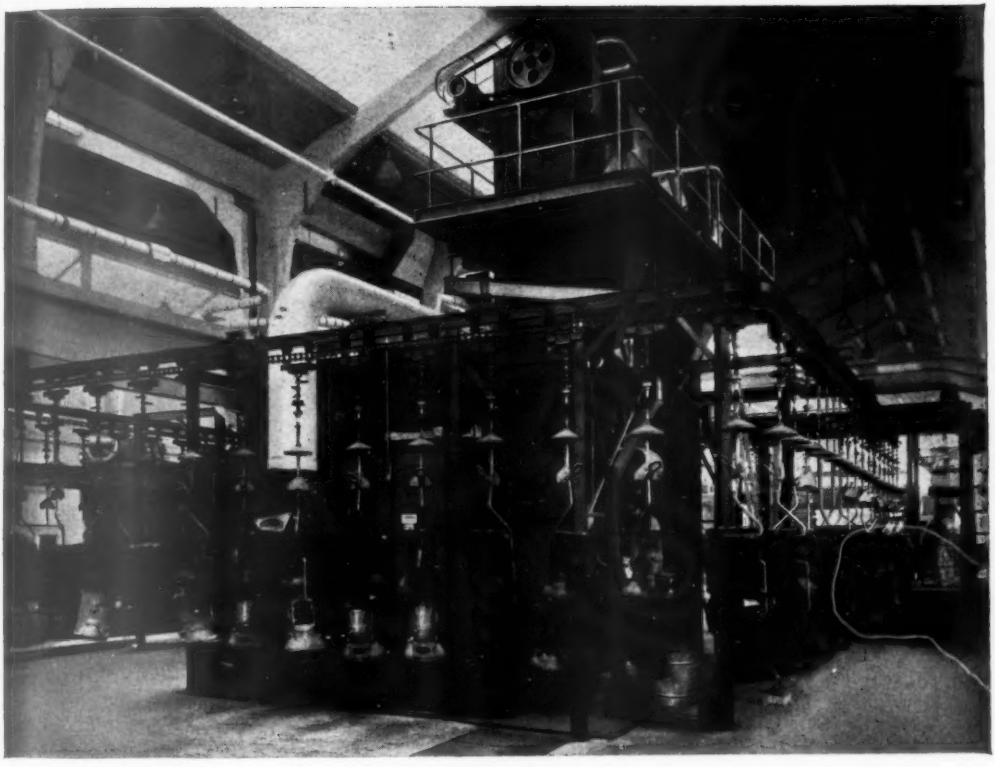
TILGHMANS LIMITED

Overhead Monorail Conveyor Cleaning Plants

at Sterling Metals Ltd., Nuneaton



The illustration shows one of two overhead monorail conveyor cleaning plants installed at Messrs. Sterling Metals Ltd., Nuneaton. The machines are engaged in cleaning automobile component castings which pass through the 23ft. by 13ft. 6in. by 10ft. high cabinet and are thoroughly blasted by four centrifugal shot blast wheel units.
Tilghman's are experts in building shot cleaning plants for every type of work, and would be pleased to advise you on any application. Consult us about that special plant for your particular problem.

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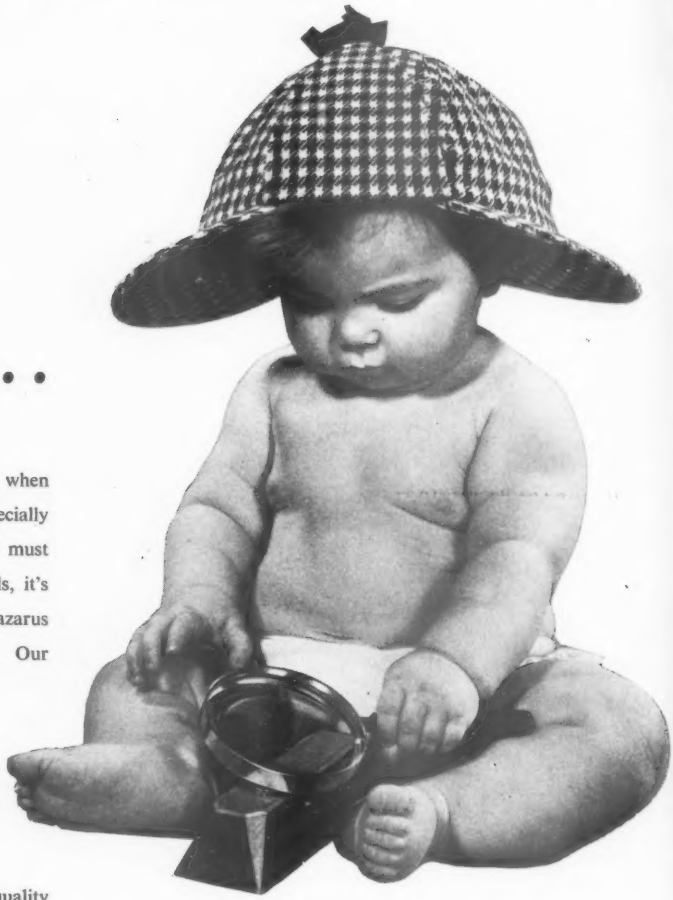
W230

Worth looking into . . .



To find exactly what you want, when you want it, can be difficult—especially when quality, price and delivery must all be right. But with Ingot Metals, it's easy. Simply 'phone Leopold Lazarus Limited for all your requirements. Our scientifically controlled production technique ensures Ingot Metals *exactly* to specification—prices, the keenest anywhere — and deliveries, better than ever. Try us for your next order. For the highest quality Ingots at consistently competitive prices . . .

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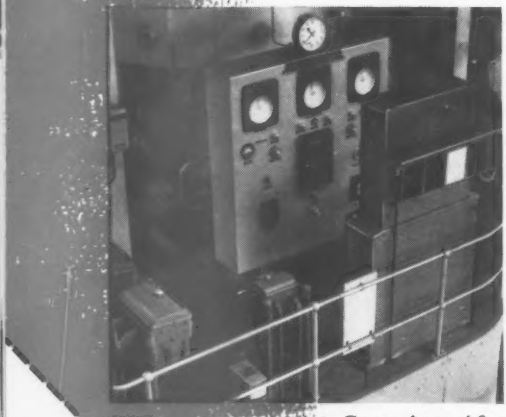
Headwork of swivel charger with power traverse for two 20-ton-per-hour cupolas.

Materials from floor weigh hopper discharging into a drop bottom bucket of swivel charger serving two 12-ton-per-hour cupolas.



Control panel for two 10-ton-per-hour cupolas.

Interesting features of recent Incandescent-Whiting Melting Plants

4 new leaflets

These features are described in greater detail in four new leaflets. Tick those which you would like to receive and pin this coupon to your letterheading.

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Completely mechanized melting plants by INCANDESCENT.

Drop bottom doors for a 35-ton cupola. These doors, which are 11 feet above floor level, are actuated and locked hydraulically. Hand operated safety bolts are provided.

(*Below*) 15-ton oil-fired stationary receiver for a pair of 20-ton-per-hour cupolas.

Coke and limestone weigh hopper with automatic feeders and weigher for two 20-ton-per-hour cupolas.

(*Below*) Coke hopper, floor weigh hopper and stock bins, for swivel charger serving 8-ton-per-hour cupolas.

THE INCANDESCENT HEAT CO. LTD.
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Manufacturing representatives of the Whiting Corporation, U.S.A.

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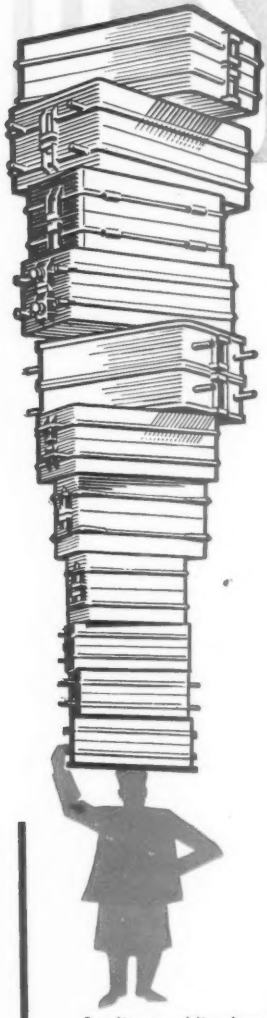
lightness



Lightness is only one of the many attributes of Sterling moulding boxes. Combined with strength and accuracy they are truly interchangeable and will withstand any rough treatment when being knocked out. They will not break as is so liable to happen with heavier cast iron boxes. The lightness of Sterling enables you to put more work down in a day than with heavier types. This lightness makes for easier handling all round.

Sterling

597 Cogent

Sterling moulding boxes are made in over sixty different styles and all sizes from 9in. square upwards. If you wish for information regarding the best box for your particular purpose, get in touch with Sterling.
Sterling representatives will be pleased to call at your request.

STERLING FOUNDRY SPECIALITIES LTD.
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Throw away

your labour-wasting hand-operated pulley-block

ONLY £66

buys you the WORLD'S BEST 5 cwt ELECTRIC HOIST:

ACROW DEMAG BANTAM

Guaranteed by DEMAG-ZUG, world's largest hoist makers

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SITUATIONS WANTED

YOUNG MAN (31), A.M.I.B.F., seeks post as ASSISTANT SALES MANAGER, or similar interesting progressive position, in the foundry industry. London, Birmingham or Sheffield areas preferred. Box YM717, FOUNDRY TRADE JOURNAL.

FOUNDRY METALLURGIST (30) seeks any position with prospects. Would consider position home or abroad.—Box WW725, FOUNDRY TRADE JOURNAL.

SITUATIONS WANTED—*contd.*

SENIOR ENGINEERING BUYER seeks change, 20 years' experience large engineering organisations, requires agency in Grey Iron, all grades. New areas will be thoroughly developed by Principal and Staff. Opportunity of live wire representation for go-ahead foundry. Box SE720, FOUNDRY TRADE JOURNAL.

PLANT ENG. (Qual. Eng. & Qual. Arch.). Foundry Development & Maintenance, Plant & Buildings, Dust & Fume Control, and all Services. Desires responsible appointment, in or near LEEDS. Box PE721, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

FOUNDRY SUPERINTENDENT required for Blackheart Malleable Iron Foundry in the Midlands. The post calls for a man with up-to-date knowledge of moulding in green sand, dry sand and CO_2 processes. All round experience is required in both jobbing and mechanised plants. Applicant must be capable of handling labour. Pension scheme. House available.—Write in confidence, stating age, experience and salary required, to Box FS693, FOUNDRY TRADE JOURNAL.

FOUNDRY METHODS ENGINEER. Well-known Midland Blackheart Malleable Iron Foundry has vacancy for a fully experienced man on both jobbing and machine moulded castings. Pension scheme. House available.—Write in confidence, stating age, experience and salary required, to Box FM694, FOUNDRY TRADE JOURNAL.

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SITUATIONS VACANT

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Replies, which should give full details and which will be treated in strict confidence, should be addressed to Box DF 714 FOUNDRY TRADE JOURNAL.

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Applications will be considered in strict confidence and should be addressed to:—

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TIPTON, Staffs.

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Salary commensurate with qualifications and experience.

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SALES MANAGER required for large Non-ferrous Foundry producing castings up to 3 tons in weight. Must have technical knowledge and fully experienced in weight calculation and estimating. Must organise and control sales staff. State age, experience and salary required to Box SM719, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

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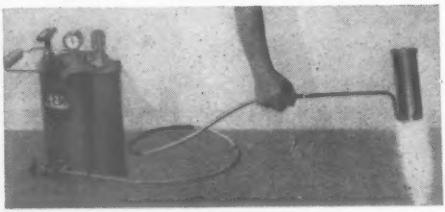

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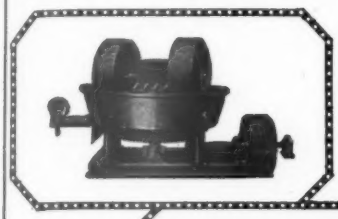

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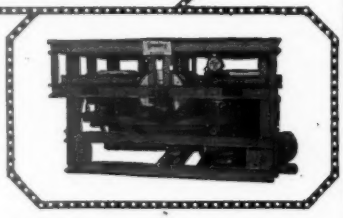

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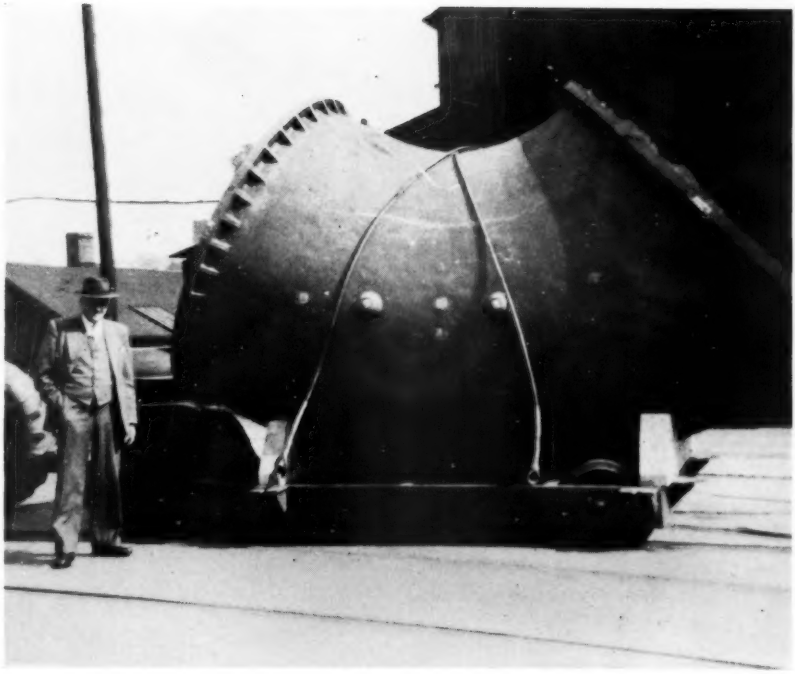

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VOL. 106
No. 2226
JUNE 11, 1959
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